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LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPBUILDING IN 1898.

During 1898, exclusive of war ships, 761 vessels of 1,367,570 tons gross (viz., 744 steamers of 1,363,318 tons and 17 sailing vessels of 4,252 tons) have been launched in the United Kingdom. The war ships launched at both government and private yards amount to 41 of 191,555 tons displacement. The total output of the United Kingdom for the year has, therefore, been 802 vessels of 1,559,125 tons.

The output for the year in the United Kingdom has surpassed all earlier records. In some previous returns of this kind, the figures for 1889 have been taken for comparison as a rough approximation to the maximum productive capacity of the shipbuilding yards of the United Kingdom. The fact that the output of that year has now been exceeded by 158,000 tons as regards merchant vessels, and by upwards of 150,000 tons as regards war vessels, indicates alike the remarkable character of the year's work and the great resources of British shipbuilders.

Comparing the present returns with those for the past two years, it will be seen that the tonnage launched in 1896 and 1897 was less by 208,000 tons and 415,000 tons respectively, than that launched in 1898. Concurrently with this increased output of mercantile tonnage during 1898, the 1897 figures for war vessels have been doubled and those for 1896 have been exceeded by 28,000 tons.

It is noteworthy, moreover, that the output of 1898 is, with inconsiderable exceptions, entirely composed of steam tonnage. In 1889, the record year alluded to above, 10 per cent. of the output was composed of sailing tonnage. For the four following years (1890 to 1893), the proportion rose to 19 per cent. Since that period, the construction of sailing vessels has rapidly declined, until in 1898 sailing tonnage has formed only 0.3 per cent. of the output. The past year has thus established a new record, not only as regards the total production, but also as regards the commercial effectiveness of the tonnage constructed.

As regards the material employed for ship building purposes in 1898, it is found that 99 per cent. of the tonnage has been built of steel and 1 per cent. of iron. The iron tonnage is practically made up of trawlers, and comprises no vessel of more than 225 tons.

Of the total output, 1,057,775 steam tons and 3,867 sailing tons, or 1,061,642 tons in all (nearly 78 per cent.) belong to ports in the United Kingdom. In this connection, it may be noted that the losses, &c., of United Kingdom vessels during twelve months are shown by Lloyd's Register Wreck Returns to average 276,000 tons (194,000 steam, 82,000 sail). Sales to foreign and colonial owners for the twelve months ended October, 1898, reached the large total of 563,000 tons (426,000 steam, 137,000 sail). On the other hand, purchases from foreign and colonial owners during the same period amounted to 104,000 tons (100,000 steam, 4,000 sail) The sailing tonnage of the United Kingdom would thus appear to have decreased by about 211,000 tons, while the steam tonnage has increased by 538,000 tons. The net increase of United Kingdom tonnage during 1898 is therefore about 327,000 tons. This figure exceeds the similiar estimates for 1895, 1896 and 1897, by 198,000 tons, 110,000 tons and 279,000 tons respectively.

Rather over 22 per cent. of the total output has been built to the order of foreign and colonial shipowners in 1898, as compared with 25 per cent. in 1897, 30 per cent. in 1896 and 20 per cent. in 1895. Denmark has this year provided the largest amount of work for British shipbuilders, 22 vessels of 44,691 tons (3.2 per cent. of the total output) having been built for that country. Norway follows closely with 16 vessels of 44,338 tons. Next come Russia with 38,330 tons; Germany with 37,045 tons; and Japan with 30,191 tons.

The largest steamers which have been launched in the United Kingdom during the year are the following:—

	Tons Gross.		Tons Gross.
AFRIC	11,850	STATENDAM	10,475
MEDIC	11,850	OMRAH	8,300
NEW ENGLAND	11,394	ULTONIA	8,056

Except the Inverclyde, of 1,634 tons gross, no sailing vessel of considerable size has been launched in 1898.

Of the principal shipbuilding centres of the country, Sunderland takes the lead with an output of 258,754 tons. Then follow in order Glasgow, (242,256 tons), Newcastle, (238,551 tons), Greenock, (149,049 tons), Middlesbro' (140,729 tons), Hartlepool, (125,791 tons), and Belfast, (119,526 tons). If, however, war ships be taken into account, the leading ports stand thus:—Glasgow (282, 356 tons), Newcastle (273,961 tons), and Sunderland (258,754 tons).

The returns for the year under review include 201 steam trawlers and other fishing vessels; 20 dredgers, barges, &c., 24 yachts; 36 tugs; 6 vessels intended to carry oil in bulk; and other vessels designed for special service.

Of the vessels launched in the United Kingdom, 654 of 1,131,237 tons have been built under the Society's inspection with a view to classification in Lloyd's Register Book.

As regards the movements of the shipbuilding industry during the course of 1898, Lloyd's Register returns show that, irrespective of war ships, the total tonnage under construction in the United Kingdom on the 31st December, 1898, exceeded by about 387,000 tons, or over 38 per cent. that under construction twelve months previously. The increase is entirely in steam tonnage, the sailing tonnage now in progress being quite insignificant. At the close of 1897, 1,013,319 tons (1,009,192 steam, 4,127 sail) were being built. These figures were themselves almost certainly without precedent in the history of the shipbuilding industry. The returns for each succeeding quarter showed a further expansion of work, until at the present time no less than 1,401,087 tons (1,398,291 steam, 2,796 sail) are under construction in the United Kingdom. It should be added that the warship tonnage being built in the country also reaches a higher total than any that has hitherto been recorded by Lloyd's Register. Five years ago it stood at 95,000 tons displacement. In December, 1897, it reached 313,000 tons. Now it amounts to 410,000 tons.

Attention is drawn to the statistics from which it appears that there have been built abroad, during the year, 371 steamers of 415,907 tons, and 158 sailing vessels of 109,866 tons, in addition to 50 war vessels of 175,318 tons displacement. Among foreign countries, the three leading places are held by the United States of America (173,000 tons), Germany (153,000 tons), and France (67,000 tons).

In the United States a large warship tonnage (67,000 tons displacement) has also been launched during the year. Of the mercantile tonnage reported from the country, nearly half does not effect the general commerce of the world, being intended either for service on the Great Lakes or for local service on the Pacific coast. As showing the sizes of vessels employed on the Great Lakes, it may be mentioned that six steamers have been built for this trade during 1898 of upwards of 4,000 tons each, besides five sailing barges over 3,000 tons each, two of the latter approximating to 5,000 tons.

Germany has launched the Graf Waldersee, of 12,800 tons, and the Bulgaria, of 10,237 tons, besides five other steamers of more than 5,000 tons.

In France, the construction of large sailing vessels, almost abandoned elsewhere, has continued to flourish under the influence of the bounties granted by the state. Twelve such vessels, of 2,000 tons and upwards, have been launched during the year under review. The largest of these, and likewise the largest seagoing sailing vessels built in the world during the year are the Emilie Siegfried and the Ernest Siegfried, of 3,214 tons each. Both have been built at Havre, under the supervision of Lloyd's Register. No similar expansion is noticeable in the construction of steamers in France.

In Italy, the mercantile output of the year has only been about 26,000 tons, but much larger figures may be anticipated in 1899. The returns of vessels now in progress, or contracted for, amount to about 90,000 tons, as compared with only 34,000 tons at the end of 1897. Italy, it may be noted, is another of the countries in which the shipbuilding industry is affected by the operation of bounty laws.

If to the figures be added those for the United Kingdom, as given in the preceding tables, the total output of the world during 1898 (exclusive of war ships) appears to have been about 1,893,000 tons (1,779,000 steam, 114,000 sail). Lloyd's Register Wreck Returns show that the tonnage of all nationalities totally lost, broken up, etc., in the course of twelve months amounts to about 733,000 tons (328,000 steam, 405,000 sail). It will thus be seen that, while the sailing tonnage of the world has been reduced by about 290,000 tons during 1898, the steam tonnage has increased by about 1,450,000 tons. The net increase of the world's mercantile tonnage is, therefore, 1,160,000 tons.

Compared with this net increase for the world, the net increase of 327,000 tons, as stated above, for the United Kingdom is equivalent to 28 per cent. In the net increase of the world's steam tonnage, viz., 1,450,000 tons, the United Kingdom has shared to the extent of 538,000 tons, or 37 per cent. Of the new tonnage launched during 1898, the United Kingdom has acquired 56 per cent.

THE SHIPPING BILL.

President C. A. Griscom, of the American Steamship line, stated to the Senate committee on commerce that, in his opinion, the shipping bill which is now before both branches of Congress, being introduced simultaneously in each, will accomplish the purpose for which it was framed, if enacted into law. That purpose is the rapid restoration of the American merchant marine. He says that, if it shall pass, his company will build four new ocean liners in the United States; if not, the company will quit when its present boats—the St. Paul, St. Louis, City of New York and City of Paris—are worn out.

It is to be noted that this bill has the support of all the great commercial organizations of the country. The National Association of Manufacturers, in session at Cincinnati last week, declared in its favor. It is supported by all the shipping interests of the Great Lakes, and the seaboard; by the exporters and importers, and by the shipbuilding interests. And the intelligent public opinion of the country should zealously push this effort to regain American supremacy of the ocean carrying trade of the world.

The prospects for the bill are good. It has been reported favorably by the committees of both houses having it in charge. The only thing which may prevent its passage this winter is the brevity of the congressional term, which has only about four weeks to run. Though the time is short, Congress should take warning by what happened last spring at the breaking out of the war. The government could not immediately secure the vessels it needed for fast cruisers and for transports. Under this bill, it would have all it would need.

NEWS AROUND THE LAKES.

CHICAGO.

Special Correspondence to The Marine Record.

Geo. F. Lynn, of the O. S. Richardson Fueling Co. has gone east in the interest of his firm.

The Dunham Towing and Wrecking Co.'s repair department made repairs on the steamer W. R. Linn before she was towed to South Chicago to load.

Chicago grain elevators now contain 24,869,000 bushels of grain, divided as follows: Wheat, 6,099,000 bushels, corn 12,487,000 bushels, oats 4,270,000 bushels, rye 493,000 bushels, barley 1,520,000 bushels.

C. W. Norris, of Milwaukee, sold a one-twenty-fourth interest in the steamer Topeka, which is 1,111 tons burden, to Fanny W. Norris for $2,000. Besides this, he also sold an interest of the steamer Omaha of 939 tons burden to the same party for $4,000.

Commodore C. H. Starke has transferred a one-fourth interest in the tugs operated by the Milwaukee Tugboat Line to his son-in-law, William H. Meyer, for a nominal consideration. The ownership of the tug fleet is now divided as follows: W. H. Meyer, one-half; Commodore C. H. Starke, one-fourth; estate of Conrad Starke, one-fourth.

At the Chicago Ship Building Co.'s dock the Toledo and Ann Arbor car ferry No. 2 in dry dock for new wheel and straightening shaft; schooner Thos. H. Howland in dock for bottom calking and general repairs; steamer Wm. R. Linn in dock for eleven plates to be re-rolled and some new frames; also repairs being done on steamer Geo. N. Orr, Onoko, Manhattan, McWilliams, Saxon and Roman.

The annual meeting of the Aurora Mining Co. at the offices of the company, at Milwaukee, resulted in the election of the following officers: President and treasurer, Charles F. Rand, of New York; secretary and counsel, Howard Morris. The other directors of the company, in addition to the officers named, are: James C. Colgate, Charles W. Harkness, New York; E. H. Abbot, Cambridge, Mass.; L. H. Severance, Cleveland; W. J. Olcott, Bessemer, Mich.

Grain chartering has been quite active this week at Milwaukee. The steamers P. P. Pratt and George W. Roby, which wintered at Milwaukee, will go to Manitowoc to load rye and corn for winter storage and spring delivery at 3 cents. The corn rate here and at Milwaukee holds steady at 2¾ cents. At Milwaukee the steamers Tom Adams and R. P. Flower have been taken by Nye, Jenks & Co. for about 200,000 bushels of corn at this rate. The steamer Vulcan has also been chartered by the Northern Grain Co. for a straight cargo of barley from its elevators at Manitowoc at 3 cents, spring delivery. The steamer John Plankinton is under charter to the Milwaukee Elevator Co. The Plankinton was substituted for the W. M. Egan, chartered about two weeks ago.

LATER—Grain charters have gone to 3 cents on corn, the figure that I have been advising for a month past, although brokers pressed owners to close at 2¾ cents, and they ought to have seen the situation as well as I could. There is only a small fleet wintering here, grain is reaching the elevators steadily and there has been a chronic shortage of railroad cars, so that the logical inference was an improved rate for winter storage and spring delivery. At the close of navigation the grain capacity of the vessels was estimated at 4,500,000 bushels. All of this is under charter except 1,300,000 bushels. The amount of corn afloat is 1,500,000 bushels. A number of vessels are under charter for oats but not loaded.

Commodore F. W. Morgan, of the Chicago Yacht Club, replies as follows to Toledo's objections to the methods of handling the international trial races: "We are more anxious than any other club to make the trial races off Chicago a success, for the reason we are challengers for the cup. We have invited every yachting association on this side of the Great Lakes to send boats. There is no more hope for a Chicago boat than for one from any other city. It is obvious to any yachtsman why a committee should decide which is the most capable boat of racing for the cup. Off Toronto there is usually little wind, while in the trial races off Chicago there may be a high wind. This must be taken into consideration, and the mere matter of a boat crossing the line first in Chicago does not make it the best boat for the race at Toronto. We have a committee, consisting of W. R. Crawford, George Warrington and Charles H. Thorne, that will decide the matter, and I think no better committee could be found in the West. It is to be regretted that Toledo has taken such a stand."

AT the recent banquet in San Francisco given Irving M. Scott, the builder of the Oregon, upon his return from Russia, says the "News Letter," Mayor James D. Phelan called forth the plaudits of the evening by a speech, in which he described the interview between the czar and Mr. Scott as follows: "Having heard so much about the builder of the Oregon," said the mayor, "the czar sent for him when he wanted to build some nice, new battleships of his own. 'Let me see your schedule of prices,' said the emperor of all the Russias. Mr. Scott handed over one of his price lists. The czar glanced at the first figure that caught his eye. Then he retired to study them over. 'Before awarding the contracts,' he said to Mr. Scott, 'I want to examine these prices carefully.' On the following morning the czar issued his famous appeal for the disarmament of the whole world."

CLEVELAND.

Special Correspondence to The Marine Record.

The Cleveland & Pittsburg ore dock at this port, which has been operated by the railway company for some time, will be in the hands of M. A. Hanna & Co. this season.

Pickands, Mather & Co. purchased the large steel steamer Black, this week. The Black is a handsome cargo steamer built last year by the Cleveland Ship Building Co., to the order of Detroit parties.

The coal cargo of the steamer City of Glasgow, which fell off the blocks in dry dock, is being lightered. The work is slow, but the dry dock people expect to float the steamer to-day, when a survey will be held on the hull.

Commodore E. C. Berriman, who had the Vencedor built, and Capt. W. L. Crawford, of the International Yacht Race Committee, visited this port on Monday. They said the trial race to select a challenger will be sailed in Chicago in August.

The Bourne-Fuller Co. has recently sent to the offices of consumers of plates, sheets, bars, pipe, shapes and other finished material, a steel letter-opener with ornamented celluloid handle bearing the name of the company on one side and on the other, "Iron, steel and pig iron."

The Iron Trade Review issues a supplement this week showing the Lake Superior iron ore shipments for the past forty-three years, this table is also usually printed on different colored paper and issued by other journals, thus making it a joint compilation of the Lake Superior shipments.

At the annual meeting of the Cleveland Steel Canal Boat Company, held this week, the former board of directors were re-elected as follows: H. B. Burrows, F. H. Chisholm, H. F. Lyman, L. A. Roby, F. H. Crosthwaite, R. H. Bordos, E. J. Siller, W. H. Champney and C. E. Wheeler. The directors did not meet to elect officers, but there is no doubt that the same officers will be again chosen.

The board of supervising inspectors of steam vessels have amended the regulations regarding riveting marine boilers, to provide that the longitudinal and circumferential seams in the flues for these boilers, twenty inches outside the diameter or less, may be punched. The regulations in force up to this time require all rivet holes in marine boilers, including flues, shall be fairly drilled instead of punched.

Ore shippers are doing some season chartering at the rates taken several weeks ago. Sales have been heavy and the leading shippers are covering the ore sold by lake freight contracts. Some ore to be moved from Escanaba was covered this week at 50 cents. There is some inquiry for lumber tonnage, but owners of vessels of that class do not seem to be in a hurry to charter. Several deals are on and some tonnage may be placed before the close of the week.

A special from Washington to-day gives the Ohio appropriations on rivers and harbors as follows: Ashtabula, continuing improvement, $50,000; continuing contract, $430,000; Lorain, continuing improvement, $50,000; continuing contract, $645,000; Cleveland, dredging between government piers, $75,000; Conneaut, $100,000; Fairport, $100,000; Huron, $25,000; Sandusky, $80,000; Port Clinton, $6,000; Toledo, continuing improvement, $150,000; continuing contract, $855,000.

The grand lodge of the Shipmasters' Association is now in session at Toledo, the following delegates being present: Captain Clark, Buffalo; Captain A. C. May, Port Huron; Captain James Wood, Chicago; Captain A. Carleton Graves, Cleveland; Captain A. B. Marquette, Milwaukee; Capt. A. J. McKay, Detroit; Capt. A. J. Ward, Marine City; Capt. W. A. Collier, Cleveland; Captain Edward Chilson, Toledo. A large number of supply men and others dealing with masters during the season of navigation are attending the meeting.

A meeting of the executive committee of the Lake Carriers' Association was held at the office of Harvey D. Goulder Esq. this week. President Frank J. Firth, of Philadelphia, was present, and the other out of town members of the association who attended the meeting were Secretary C. H. Keep, Capt. J. J. H. Brown and J. B. Rogers, of Buffalo; A. B. Wolvin, of Duluth, and L. C. Waldo, of Detroit, chairman of the new grain bill of lading committee. President Firth was unable to be present at the annual meeting at Detroit last week, and for that reason much of the business transacted was gone over in a general way so that the new president might become familiar with the work on hand. Nearly all the members of the grain bill of lading committee were present. Members of the association are taking more interest in this matter than any other question that has been taken up, and a hard fight all along the line will be made to correct the abuses in the grain trade. Mr. Goulder pointed out the principal features that will be in the new bill of lading. As soon as the new bill is formulated a copy of it will be sent to all the members of the association and an effort will be made to have the owners of grain carrying vessels agree on all points, so that when the question is taken up with the grain and elevator men, the vesselmen will all be of the same opinion. It will be a couple of weeks before the committee will be ready to meet with the shippers and elevator men.

COMPLETE returns from the mines to The Iron Trade Review show that the shipments of Lake Superior ores in 1898 were 14,029,682 tons. It is estimated that consumption in the coming year will be from 15,000,000 to 16,000,000 tons and that Lake Erie dock stocks will be drawn upon to supplement the production of the mines under the present supply of mining labor.

DETROIT.

Special Correspondence to The Marine Record.

Supervising Inspector of Steamboats, C. H. Westcott has sent out his annual report of the work done in the eighth district during the year ended Dec. 31, 1898. The report is simply formal and loaded with the bare figures of routine work gone through by the various local inspectors.

The old established firm of L. Black & Co. has been incorporated after doing business under the old name for half a century. The firm is now The L. Black Co., capital, $60,000, all paid in and consisting of the following named well-known gentlemen: Herman W. Boers, Ben S. Cohen, Louis Kachen, and Carl Wagner.

A dispatch from Bay City says: Capt James Davidson has contracted to rebuild the schooner George W. Owen, which went ashore last fall. The boat will be towed from Cleveland to Bay City as soon as navigation opens. It is also arranged for bringing a number of other vessels to Bay City for repairs, so that the yards will be busy all summer.

The ice from Lake St. Clair has been coming down freely for the past week and the river looks like a small section of the arctic circle. The railroad transfer car ferries experienced considerable trouble in getting through the ice, but they have managed to keep their paths clear. The Detroit and Windsor ferries are having but little trouble with the ice jam and are running on schedule time, as usual.

Chicago brokers now notify vesselmen that an advance had been made in grain rates and that for winter storage and spring delivery at Buffalo, 3 cents had been paid on corn. The steamer Onoko was chartered for a cargo of clipped oats at 2¼ cents, which it is said figures better than 3 cents on corn. There is a good demand for grain tonnage at all the Lake Michigan ports and the indications are that the supply of available tonnage will all be under charter before many weeks and that there will be a fair inquiry for boats to arrive in the early spring.

The Detroit Electric Wiring and Repair Co. are doing the best class of work in their line of business, a specialty of which is the electric lighting of vessels. The senior member of the firm, Mr. B. F. Seidler, is an expert electrician of long experience, while Capt. F. J. Miner was a charter member of the Shipmasters' Association, Detroit Branch No. 7, is thoroughly well posted regarding steamboat construction and equipment and the best arrangement for electric wiring on shipboard. The Detroit Electric Wiring & Repair Co. were the first to install the insulated iron armored conduit system aboard ships and the principle is now recommended by the best classification societies and adopted by the Navy Department, Bureau of Equipment.

The steamer Clarence A. Black, which was built by the Cleveland Ship Building Co. for A. McVittie and others of this port, has been purchased by Pickands, Mather & Co., Cleveland. The price is said to be $240,000. The deal was closed here on Monday by H. Coulby. During the past few weeks several parties have been figuring on buying the steamer, and last week one firm sent an expert to Buffalo to examine her. The firm referred to and the owners of the vessel were about $5,000 apart on the price. The Black is said to be one of the best cargo steamers on the lakes. She came out last September. Her largest cargo was 6,100 tons of ore. She is 434 feet over all, 414 feet keel, 50 feet beam and 28½ feet deep. She has triple-expansion engines, cylinders 22, 35, and 58 inches, with 40-inch stroke. She has three Scotch-type boilers 14 feet in diameter and 12 feet long, allowed 170 pounds of steam, and is fitted with forced draft. The Detroit parties made a large profit on the transaction. Pickands, Mather & Co, have two large freighters, a steamer and a barge, building at the yards of the Chicago Ship Building Co. that will come out early in the season.

PORT HURON.

Special Correspondence to The Marine Record.

In August, 1896, Capt. B. Brown, of this city, who was acting first mate on the steamer Nipigon, was seriously injured at the Welland canal and died soon after. It is claimed that Capt. Brown was standing on the side of the canal when the vessel entered. In some manner he was struck by a fender, both of his legs being crushed. He was taken to the hospital at St. Catherines where he died two weeks later. Mrs. Brown has commenced suit in the Circuit Court of Wayne county against the Whiting Transportation Co., owners of the boat, claiming $30,000 damages. Atkinson, Wolcott & Moore, of this city, will appear for Mrs. Brown. During his lifetime Mr. Brown was one of the best known vessel captains in Port Huron.

Edward Hemmingway, through his attorneys, Atkinson, Wolcott & Moore, began suit for $2,000 damages against Robert R. Rhodes, owner of the steam barge Neshoto. Mr. Hemmingway, while emptying a three-gallon can of turpentine and a two-gallon can of Japan dryer into other cans in the forecastle of the boat one night in April, 1898, was severely burned by the gas from the turpentine becoming ignited. He claims that instead of furnishing a lantern for lighting the forecastle of the boat that Rhodes furnished candles and that this is the reason the explosion took place. His right hand was permanently stiffened and disabled, the knuckles, fingers and ligaments of the hand burned and the flesh destroyed. His left leg was also permanently stiffened by reason of the explosion. The case will be tried in the St. Clair county Circuit Court.

N. Mills, of the Mills' Transportation Co., says: "I can't see why vessel men should take 60-cent ore, or $2 lumber freights from Lake Superior this season. They must figure

that everything that goes into the carrying trade must pay more for coal, labor and everything else that is connected with it, and on the other hand a large amount of ore tonnage has been wiped out by last season's storms, collision and fire, or gone out of commission. I have been informed that from 35,000 to 40,000 tons of ore carrying boats were wrecked last season, and that 85,000 to 90,000 tons of lumber carrying boats have gone to the Atlantic coast, and many of them were lost in the storms of last November. It seems to me that with this loss of tonnage, the increase of expenses and surplus of product to carry over previous years, lake freights in 1899 ought to show a decided improvement over the last few seasons."

The proposed site for the Jenks' Ship Building Co. is on the Lefferetts Bunce farm just north of the summer residence of O'Brien J. Atkinson. It is a spot well adapted to shipbuilding purposes. If the Grand Trunk or F. & P. M. railway companies can be induced to extend their tracks to the new yards the company will ask the township of Port Huron to abandon the present river road, and to lay out a new one 700 feet from the banks of the river. O'Brien J. Atkinson, speaking on the subject, said: "In my opinion there will be no trouble in securing the right of way for the proposed new road. As far as I am concerned I will cheerfully help the company by giving them the right of way through my property and I know that adjoining property holders will do the same thing. In addition to the Grand Trunk or F. & P. M. extending their tracks to the Bunce farm I believe it would be to the interest of the City Electric Railway to extend its line as far south as the farm or to St. Clair at once. The distance from Military street bridge to the Bunce farm is about four miles.

BUFFALO.

Special Correspondence to The Marine Record.

It is now reported that the Cleveland Steel Canal Boat Co. will not build the steel barge, for which a contract was nearly closed with the dry dock company here.

William Dormer, seaman on the steamer W. L. Frost, was drowned in the Ohio basin on Saturday night. He is supposed to have had friends in St. Catherines, Ont.

The American Steel Barge Co., of West Superior, Wis., is out for bids on 2,000 tons of steel plate and 1,500 tons of shapes to be used in a new boat to be built this spring.

The Spalding St. Lawrence Boat Co. of Ogdensburg, has received an order for one 30-foot gig, one 26-foot lifeboat and one 24-foot cutter for J. Pierpont Morgan's new yacht Corsair.

C. Hiltebrandt, shipbuilder, Kingston, N. Y., has the contract to build 12 barges for parties engaged in the boating business about New York City. The contracts will involve about $75,000.

Buffalo set out two weeks ago to raise $500,000 for the Pan-American Exposition of 1901. By Saturday, Jan. 28, the amount subscribed had reached $1,200,000. The purpose is to make this one of the greatest of the expositions that have come in the wake of the World's Fair.

The first estimate of the damage sustained by the steamer I. W. Nicholas proves to have been too low. Twenty-five plates must be taken off and re-rolled. The steamer Robert Mills was docked for what appeared to be light repairs, but other damage has been found and considerable money will be spent on her.

Some of the underwriters' general agents state that damage reports have come in since the first of the year more numerously than they did during the season, and there is to be no abatement for the dry docks until navigation opens here, there is no lack of work, in fact they have all they can do to handle vessels needing bottom repairs before the lakes open. Underwriters' agents will give no further reports about the season losses or the future situation.

Lake insurance men, who have been east recently, say that the question of insurance for another season is still unsettled. The principals of New York, Boston and other eastern insurance centers are no more certain of the policy to be issued on the lakes than are the agents of Chicago and Buffalo, but they all talk of a contract less favorable to the vessel men and of somewhat higher rates. The scheme proposed by C. A. MacDonald, of Chicago, has been practically given up, and it would seem that the principal lake business will again be controlled next season by the McCurdy-Prime syndicate, of Chicago, and by the Johnson & Higgins, Smith, Davis & Co. combination, of Buffalo.

THE Pankratz Lumber Company, of Sturgeon Bay, is negotiating for the charter or purchase of a powerful lake tug to assist the Pankratz in a big log-towing contract which the company has secured for next season.

THE Barnett-Record Co. has secured part of the contract for building the new dry dock at West Superior, for the American Steel Barge Co. There were eight bidders for the work and competitfon was probably the closest of any similar contract let on the lakes. The dock proper will cost $200,000, while the machinery will cost about $50,000. The dock will be 606 feet long, 110 feet wide at the top and 17 feet deep over the miter sill. Officials of the company say that the dock will be finished by June 1, but they will not give out an abstract of the bids furnished for the work, one reason for this being the fact that a large portion of the work will be done by themselves.

SHIPPING AND MARINE JUDICIAL DECISIONS.

Navigable Waters—Injunction.—An injunction is properly granted to restrain defendent from filling in below the low-water line of a navigable river. McKeesport Gas Co. et al. vs. Carnegie Steel Co., Limited., 42 At. Rep. (Pa.) 42.

Navigable Waters—Changing Slope of Bank.—An injunction restraining defendent from depositing material between low and high water line in a navigable river, so as to make the slope of the bank more than one foot in three feet, is not unreasonable. McKeesport Gas Co. et al. vs. Carnegie Steel Co., Limited, 42 At. Rep. (Pa.) 42.

Inconvenience of Wharf.—Where the wharves at a port are not all equally convenient for the discharge of every sort of cargo, in the absence of a custom establishing a uniform rate, a reasonable rate of discharge is not necessarily the same at all wharves, and, while a wharf may be so inconvenient as to render the consignee responsible for the delay in discharging thereat, the reasonable convenience required is not the highest degree of convenience either imaginable or actually existing.—The James Baird, 90 Fed. Rep. 669.

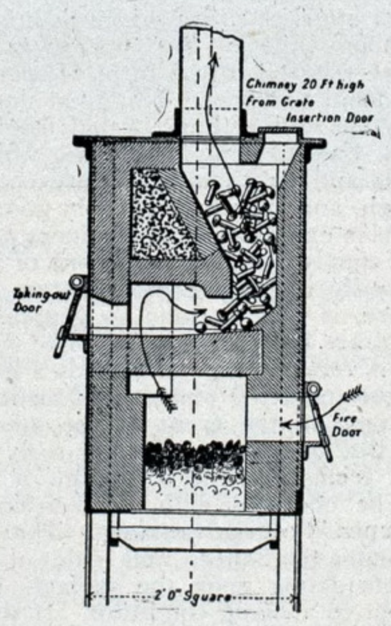
Rate of Discharging Cargo.—A charter party for a vessel to be loaded with lumber provided that "the lay days for loading or discharging shall be as follows (if not sooner dispatch), commencing one clear day from the time the captain reports his vessel ready to receive or discharge cargo: * * * Loading with all possible dispatch, but not less than 25 M. feet daily. * * * The cargo or cargoes to be * * * delivered according to custom of the port of discharge." Held, that such contract did not expressly provide for the rate of discharge at 25 M. feet daily. The James Baird, 90 Fed. Rep. 669.

Custom of Port.—A custom of a port as to the rate of discharging a certain kind of lumber from a vessel, to govern the rights of parties under a contract otherwise intermediate, must not only be established and reasonable, but also certain and definite. Such a custom cannot be found on testimony that the rate is "from 17,000 to 20,000 feet per day, or "from 25,000 to 30,000" feet. Such testimony can only establish the usual or average time for unloading, and is valuable only as showing the limits, under ordinary circumstances, of a reasonable rate of discharging lumber of that kind at such port, and does not obviate the necessity of considering the particular circumstances of each case. The James Baird, 90 Fed. Rep. 669.

CONTINUOUS RIVET FURNACE.

(Illustrated.)

The accompanying cut illustrates a new rivet furnace constructed by Messrs. Ross and Gibson, of 68 Cheapside, London. The furnace has a fireplace below, communicating by means of ports with a combustion chamber, into which opens a hopper surmounted by a chimney. The hopper is filled with rivets through the door at the top, and when hot they are withdrawn through the combustion chamber by the upper door in the side. Thus the flame on its way to the chimney is drawn by the draught through a column of rivets 9 inches or 10 inches high, and while those at the bottom of the hopper are ready ior use, those at the top—if the supply of rivets be kept up—will always be nearly cold.



Air is admitted through a regulator in the fire door to insure perfect combustion of the gases before they reach the rivets, and plenty of room is given in the combustion chamber for thorough mixture of the air with the gases. If properly worked, the furnace makes no smoke. When rivets of different lengths are wanted they are put in the hopper in layers and preserve their relative order in their descent through the hopper. Special rivets may be put into the combustion chamber through the extraction door. The furnace may be easily moved from place to place.

"EXPERIMENTS with high explosives in large guns" forms the theme of a paper by Hiram S. Maxim in the North American Review for February, in which Mr. Maxim interestingly narrates the result of a long series of experiments made by him in order to produce a gun that should throw high explosives, such as nitro-gelatine and compressed gun cotton, for many hundreds of rounds without perceptible wear taking place in the barrel.

THE MORBID ANATOMY OF IRON AND STEEL SHIPS.

By Mr. S. P. J. Thearle, Principal Surveyor to Lloyd's Register of Shipping, at Newcastle-on-Tyne.

(Continued from last week.)

The phenomenon of "panting" is one of interest and importance to naval architects. I suppose all of you have heard of "panting beams," "panting stringers," and so forth, but perhaps a personal inspection of what actual panting is in a ship may not have come under your observation. The term "panting" is suggestive of the phenomenon it serves to describe. The tendency to "pant" in a vessel is most observable at the bow, but I have seen cases of panting at the stern also. The shape of a vessel's body throughout the greater portion of her length is such that a transverse section yields a curved frame which in itself is stiff, by reason of its form, against the water pressure on the outside. But toward the bow this curvature diminishes so that the transverse sections at that part are of a flatter form. This is especially the case in sharp vessels, and less so in the full-bowed cargo steamers now so commonly built. But in all vessels, whether sharp or full, the bow is the part that receives the first impact of the sea when the vessel is being driven through waves. As a consequence it has been found that there is a tendency for the comparatively flat sides of a vessel near the bow to yield under the influence of such extra sea pressure. The framing and plating is observed to move like the ribs of a man's body when the lungs are alternately inflated and emptied, or like a dog's ribs when panting. The result of this movement, when long maintained, is to start and loosen the riveting in the frames and shell plating, and in this way not only is the strength of the vessel diminished but her cargo is damaged also. To prevent this movement it is the practice to fit additional beams both before the fore peak bulkhead and for some distance abaft it, and in addition thereto to fit extra stringers and additionally attach them to the beams bv means of gusset plates. In all cases the stringers should be wrought intercostally and attached to the shell plating. Even with these precautions, if not sufficient for the purpose, panting still goes on, and the connection between the panting beams and stringers gets torn away. Quite recently when surveying one of our earliest Atlantic greyhounds I found that her panting beams were all broken clean away from the frames and stringers, and that they had fallen from their places in the fore peak. In this case the attachment between beams and stringers was insufficient to resist the panting stresses All we had to do was to make the attachment equal in strength to the beams attached, and to ensure that these latter were sufficiently strong. All of which has now been done. I remember once surveying an iron sailing ship having a very fine after body, in which panting beams had been fitted. Upon examination all the panting beam knee rivets were loose, thus showing that not only do vessels "pant" at the after part, but that in this case the "panting" was more than the beam knee rivets could resist. Upon calling a shipbuilder's attention to this case in order to convince him that I was justified in asking him to fit similar panting beams in a vessel building by him, he replied that if the beams had never been put there I would never have known whether the vessel panted or not. This was intended to be smart, but in point of fact the tearing of beam knee connections is the least serious consequence of panting. All shipowners and, in fact, everybody who has to do with the North Atlantic trade, know only too well what a serious thing panting is, and how necessary it is to prevent it. It has been no unusual thing in days gone by for vessels to come under the riveters' hands after every winter Atlantic voyage to make good defects in the neighborhood of the bow due to panting. It is safest in dealing with this malady to err on the side of too much rather than too little provision of what is commonly spoken of as "panting arrangements," when "arrangements to prevent panting" is meant. At all events, so careful are we now-a-days to brace up and stiffen the bows of steamers, that troubles through panting are becoming scarcer every year.

One of my most interesting and instructive experiences as a surveyor of ships has recently been described by me in a magazine article. Perhaps some of you have seen the paper to which I refer, and if so, I must beg you to excuse my re-stating the matter now for the benefit of those who have not. A coasting steamer, with a fore peak tank, a cellular double bottom, a long cargo hold, and with engines and boilers right aft, was built under my survey some years ago. She differed from many other steamers which had been built under my survey at the same yard only in being of steel while they were of iron, and in being of fuller form at the bow, of greater speed, and somehwat larger in size. The cellular double bottom was of the type having floors at alternate frames, the intermediate frames being of angle bars only. Now this steamer traded between Glasgow and Dublin, and carried coals from the Clyde, returning light. In the latter condition she trimmed deeply by the stern, even when the fore peak tank was filled with water. When only about a year old I saw her raised upon a slipway, and the appearance of the bow plating at the bottom of the vessel, to a distance of some 12 ft. or so abaft the collision bulkhead, was such that I came to the conclusion she had been ashore. I told the captain so, and asked to see his log book. He denied that the vessel had grounded, and his log book had no entry of stranding having occurred. The shell plating at the bows was badly corroded and pitted. A great many of the frame rivets were started, loose and leaking. The cement on the inside was broken. The plating between consecutive floors was set up, and the lower edges of the outer strakes of plating were worn and wasted. Every indication pointed to stranding on a sandy beach,

and indeed to several strandings. The wasted and pitted plates were taken off and renewed, and the vessel repaired. A year afterwards I saw her again on the same slipway, and she presented the same appearance as she did the year before. But in the interval, other similarly designed steamers, of a type then just getting into vogue for the coasting trade, had been found presenting similar peculiar appearances. The phenomenon was a new one, simply because the conditions were of recent creation. An evolutionary development of coasting steamers had reached a stage in which new structural conditions had arisen, and what we saw showed some of the conditions to be faulty.

But which were they? And where was the remedy? It took us two years of continual experiment to find out all about it, including the way to put an end to it.

And, now please try to follow me as I endeavor to show you what we gradually discovered in studying case after case that came under our notice. Bear in mind that the vessels trimmed deeply by the stern, and further note that we discovered a personal factor in the first case I came across. It transpired that the captain was a driving man. and noted for his quick passages; that he ran the vessel as hard as he could whether loaded or light. Further, we found that in all cases the higher powered vessels showed the objectionable symptoms much more readily and markedly than those which steamed slowly; that steel vessels were the chief sinners, and those of iron were not nearly so liable to the trouble; that vessels with sharp bows did not suffer at all, nor did vessels that trimmed on nearly an even keel; that vessels with large fore peak tanks suffered worse than those with smaller ones, and that the bow plating of vessels with floors at every frame was not set up at all, while the plating of those with double-bottom deep floors at alternate frames was always in a started and bulged condition. Well, after a lot of experimenting and thinking. we discovered—First, that by using steel instead of iron the plating was thinner than it would otherwise have been, and that when the lower strakes of bow plating were made 2-20 to 2-30 thicker the frame rivets ceased to be wasted at their points because we were now able to give them a deeper and larger countersink. Secondly, by fitting frames of bulb angle section, instead of small plain angles, intermediate between the solid floors throughout that length of the fore part of double bottom which was affected, we stopped tne tendency of the plating to be set inwards, which had before been so conspicuous. Thirdly, by fitting the laps of the shell plating at the lower part of the vessel, boat-fashion, with the upper edge of each strake on the outside of the strake above, the wasting of the edges was stopped, for no longer were air bubbles collected and imprisoned against the landings every time the bow rose and sank below the surface of the sea.

All that now remains in the vessels so treated of the evil that was a few years ago so conspicuous and destructive, is a greater tendency of the plating to rust at the part in question than elsewhere in the bottom of the vessel. But so long as these vessels trim so deeply by the stern when light, for so long will the lower portion of the bow plating be subjected to influences which must result in speedy rusting. The frequent lifting of that part of the bottom above the sea, and then falling with a thump upon it, must necessarily have such an effect. It is sufficient, however, that the evil is now reduced to within such small limits.

This leads me to consider the general question of wasting by corrosion in iron and steel vessels. And here let me remark that we are about to consider a morbid appearance due to material decay rather than to structural weakness. When vessels were first built of iron it was feared that they would deteriorate most rapidly on the outer surface in contact with the sea. The rusting of iron under water was a familar experience, and hence the expectation was a reasonable one. It happens, however, that partly because of the excellent paints and compositions which have been applied to the bottoms of iron and steel vessels, and partly to causes which we are now about to consider, the greatest wasting by corrosion is found to occur on the inside, and not on the outside. The only exception to this general statement is to be found at the water-line, or, as it is termed, "between wind and water." This exception is most marked at the bows of the coasting steamers to which I have just been referring. It is here necessary to remark that in perfectly pure water iron does not rust at all. On the Great Lakes of North America, where the water is fresh and very pure, it is a usual thing for iron and steel steamers to run for seven or eight years without docking, and therefore without their bottoms being re-coated with paint, and yet these vessels show no indication of material wasting below water. I believe the same results are to a large extent experienced with the steamers running upon Loch Lomond and Loch Katrine. Corrosion in iron and steel ships is, in fact, chiefly due to the action of oxygen, chlorine, and carbonic acid gases, and to such acids as acetic, sulphuric, and hydrochloric, which are formed within the vessel and diluted in the bilge water. On the outside of the vessel above water, and on her iron and steel decks, she is continually being washed with salt water spray which is filled with air bubbles, and so the surface of the metal is continually being exposed to the action of a most destructive mixture. It is just above the water-line that the shell plating suffers most from corrosion, and it is there that the skin tends to become reduced in thickness the most rapidly. Below the surface of the sea, where the side is rarely or never exposed to the atmospheric air, the corrosive action is much less ,and may be easily averted altogether by frequent docking and painting, whereas "between wind and water" the paint is quickly removed, and the conditions for rapid wasting readily set up.

But, as I have already said, it is on the inside of the vessel that the greatest mischief is done. Moisture in the cargo—and there is always more or less of it—is evaporated, and rises to the under side of the stringers and deck flats, where it is quickly condensed, and it then trickles down the inside of the shell plating and upon tne frames. This is one great cause of the wasting of iron and steel vessels. Another, and often a greater one, is found in the nature of the cargo. Raw sugar is, perhaps, the most destructive cargo an iron or steel ship ever has to carry. The drainage in the form of molasses gets down into the bilge water, where it ferments and becomes alcohol, rapidly undergoing another chemical change into acetic acid. I have known two iron vessels in which the cement on the inside of the bottom was imperfectly laid, leave Natal with cargoes of sugar, and arrive in the Thames in almost a sinking condition, the shell plating being dissolved at some places through the entire thickness by the diluted acetic acid formed in the way I have described. I have known scores of cases in which the cement has saved the shell plating, but in which the floors and framing above the cement level have been dissolved in the same way. The remedy is a complete coating of Portland cement over every part of the vessel tnat the acetic acid may reach, and a careful washing with lime after every voyage, whereby the alkali neutralises the acid.

Coals are also a destructive cargo, especially when they contain much sulphur in the form of pyrites, and are shipped damp. Hence ironwork in bunkers is more rapidly wasted than in cargo holds. Dry coals may be carried with comparative impunity for a long time, but damp coals, or coals adjacent to an otherwise damp surface of iron or steel, are most destructive. I have known the frames and reverse frames in the bunker of a steel steamer so badly wasted in four years as to require renewal, but in that case water got into the bunker by badly-fitted lids to the deck scuttles. You will easily believe that salt, too, is very injurious to iron and steel vessels, whether carried as a cargo in bulk or as it occurs with salt fish.

Decomposing grain, fruit, or other organic substances lying in the timbers generate acids of a destructive character. In fact, there are very few descriptions of cargo—and certainly neither human beings nor cattle are among the number—which do not contribute to destroy the material of the structure by corrosion on the inside.

I remember the case of a steamer which had for years been bringing copper ore, in the form of copper sulphide, from Huelva to this country, and in which the ceiling was allowed to get worn through in places. One day she came into the Thames leaking badly. After the cargo was discharged I waited at the side of a dry dock until it was pumped out, and then went below her bottom to see where the water had got in. I found water pouring out through some small holes, and with the aid of a hammer I knocked through a great many more, so thin was the plating in places. Upon lifting the worn and broken ceiling on the inside, a strange scene was presented. Lumps of copper ore had got through holes in the ceiling, and with the rolling of the vessel had cut channels through the cement, until the iron shell plating was bared. Then, in the presence of the bilge water, a chemical transference had gone on. The sulphur had left the copper and attacked the iron, for which it had a greater preference. The sulphide of iron so formed had washed up with the roll of the bilge water, and a new surface of iron was exposed to the lumps of copper ore. And so this had gone on until the iron plating was wasted through its entire thickness in places, and much reduced at many others. But, what was queerest of all, the copper ore was left in the form of spongy lumps of almost pure metallic copper. No great ingenuity was required to prevent such a thing as that from recurring. The obvious plan was to make a ceiling thick enough and strong enough and tight enough to prevent the cargo from falling through, and then to keep it in good repair.

Some troubles experienced in steamers are not, however, so easily and simply dealt with, and one of these is plaguing shipowners badly to-day. Double-bottom construction, as you are aware, is now become so general, that very few vessels indeed are built without it. The cellular system of construction is very strong. It affords a good base of support for cargoes, and the presence of an inner bottom is a source of safety, in the event of the outer bottom being penetrated. But one is ever finding a fly in one's pot of ointment. It seems that the advantage of a double bottom cannot well be obtained without incurring a liability to some very expensive disadvantages. The trouble I allude to is found under the boilers, and is due to the heat radiating from them acting upon the surfaces of iron or steel which are kept in a damp condition. If the compartments of double bottom under the boilers were kept dry, the heat from the boilers would have little or no injurious effect upon the plating,framing, etc. And if the compartments, although wet, were kept as cool as those in the other parts of the vessel, it is evident that under like conditions like results would follow, or, in other words, there would not be a rapid rate of wasting experienced. As matters at present stand, it is no unusual thing to find the tank top plating and the floors under the boilers entirely wasted away in the course of eight or nine years, and the rapidity of corrosion is much greater with mild steel than with iron.

Perhaps it will be as well here to consider briefly the phenomenon of the relative rapidity with which mild steel is found to rust. as compared with ordinary commercial wrought iron. Why this should be so is for chemists to explain, but you are all quite familiar with the fact that cast irons rusts very slowly indeed. Before the introduction of mild steel into shipbuilding, it was a matter of common experience that the purer kinds of wrought iron, such as Bowling, Farnley, and Lowmoor, rusted much more readily than did ordinary commercial qualities. It seems that the more nearly the material approximates to pure iron, the more readily it rusts; and hence mild steel, which is the purest form of iron we have to use in shipbuilding, has this sad disadvantage of rapid wasting by corrosion.

In dealing with the double bottom difficulty several remedies have been proposed. These are—(1) Substituting iron for steel in the portion of the framing of vessel under the boilers, making it, of course, of greater thickness than steel scantlings to obtain equivalent strength. This reduces the rate of wasting, but the latter is still too considerable to be neglected.

(2) Covering the tank top under the boilers with a thick layer of Portland cement, having bricks, tiles, etc., embedded in it. This serves to some extent as a non-conductor of heat, and its value is sometimes enhanced by fitting baffle boards under the boilers to still further keep the cement cool. This remedy has not been wholly successful, although it has reduced the evil being combatted.

(3) Omitting the double bottom and the cellular construction of framing under the boilers and substituting for it the old-fashioned arrangement of ordinary floors, keelsons, etc.

This remedy brings matters back to what they were in the davs prior to the introduction of double bottoms. The corrosion is still greater than in the other holds, but the life of the boiler itself is generally shorter in duration than that of the framing beneath it, and hence at renewal of boilers there is an opportunity of cheap repair of frames and keelsons. The disadvantages of this remedy are: (*a*) The absence of that element of safety which an inner bottom affords, and that, too, in one of the most considerable and important spaces into which the vessel is subdivided by bulkheads. (*b*) Breaks in the continuity of structural strength at the ends of the boiler compartments, which must be as efficiently supplied as possible by overlapping of keelsons and girders.

(4) By adopting the cellular system of framing under the boilers but omitting alternate strakes of tank top plating, by means of occasional belts of plating under the boiler the continuity of longitudinal strength being maintained by thickening the strakes retained and of transverse strength stools.

This prevents heated moisture from being confined in air-tight spaces to work the mischief experienced in ballast tanks under boilers and has the advantage of no loss of continuity in structural strength. But, again, there is sacrificed in a large and important compartment of the vessel that very valuable source of safety which an inner bottom provides.

(5) Perhaps the best remedy of all is that of keeping the interior of double bottoms below the boilers dry by inducing a rapid circulation of air through them. Pipes lead from the tank top to the funnel uptake, and these convey away air admitted in the ordinary air pipes from the deck. By keeping the surfaces well coated with black enamel varnish and providing such a drying system as I have described, it seems that the evil is at last being completely combatted without any sacrifice either in structural strength or in that element of safety which a double bottom provides. With all our efforts it is to be feared, however, that the boiler compartments and the bunkers will always be more liable to wasting by corrosion than the remainder of the interior of the hull. Indeed, throughout the cargo holds, if care be taken to keep the surfaces clean and well coated with paint, the rate of wasting, especially in iron ships, is very slow indeed. I have recently examined iron steamers of nineteen years of age, in which outside the double bottom the cargo holds showed no signs of wasting at all.

Accessibility to every part of the vessel and closely united parts are two essential conditions for the attainment of this desirable state of things. In old vessels, built at a time when rivets were not spaced so closely in frames, reverse frames, etc., as they are to-day, a very serious source of wasting is to be found through moisture and dirt getting between surfaces not intimately in contact. When rusting is set up at such places its effect upon the strength of the structure is most disastrous. Reverse frames are forced away from frames, beam knees from frames, and frame angles from the shell plating, by the irresistible pressure of the iron oxide formed between them. It is no unusual thing to find that rivets have been broken under the ennormous strain thus set up. Closly-united joints are therefore of importance if only upon this account alone, and how much more important they are upon other grounds I need not point out to you.

The use of mild steel in ship construction, with the possibilities arising from the great ductility of that material, has led to some valuable departures in recent years, tending to minimize the area of surface in contact, and at the same time add to the strength of the structure. The joggling of lapped points is one of these, for by this arrangement we are enabled to dispense with numerous filling pieces or "slips," which have no value except as fillings, and therefore add to the weight of the hull without affording a corresponding amount of strength. Moreover, these fillings uselessly multiply the surfaces in contact, and therefore the tendencies to corrosion between them when not properly united. At first joggled lap joints were used only for deck plating, inner bottom plating, and bulkheads, but now it is not unusual to apply the system to shell plating also.

One very serious source of wasting by corrosion has not yet been met by any remedy. I refer to the rusting of steel and iron decks when not sheathed with wood. The constant falling of salt water spray on iron or steel decks is a serious source of loss of material, which takes place, too, at a rapid rate. I fear that no coating will resist the wear

and tear incident to the traffic on the upper surfaces of a weather deck, and hence the metal is inevitably exposed to the corroding influence of sea water spray. The upkeep of bare iron and steel decks, especially the latter, will ere long prove a serious tax upon the shipowner's already very meagre profits. Anyone inventing a coating which would prevent the corrosion of iron and steel decks, and fairly well resist the wear of walking, etc., upon them, would supply a long-left want and become rich to the bargain.

I have, perhaps, sufficiently occupied your time and tried your patience with my somewhat rambling discussion of the morbid conditions discoverable in iron and steel ships. The subject itself is, however, very far indeed from being exhausted, and every day adds to our knowledge regarding it. Just as the hospital and infirmary are valuable aids in the training of your medical fellow-students to be skillful surgeons and physicians, so are our dry docks and repairing slipways the best of practical training schools for naval architects and shipbuilders. It is upon these grounds that I have chosen this subject for your attention this evening, and it is upon these grounds that I would advise you to ever seek to fortify the knowledge to be gathered from books by that best of all knowledge which is the result of careful and intelligent observation.

THE FRENCH BOUNTY SYSTEM.

In view of the interest attached to and now being expressed regarding the Hanna-Payne shipping bill and its principles of state assistance being granted to vessels in the over-sea trade, we note this week the views of the Liverpool Journal of Commerce on the system as it is applied under the French law.

It appears that great expectations were anticipated by the introduction of the bounty system in France under the law of January 19, 1881, but the expansion of tonnage has not, up to the present day, kept pace with the sanguine prognostications of the shipowners who dangled before the eyes of the legislative members the vista of an enormous increase of vessels flying the tricolor flag. By the navigation act of 1798, no vessel is to be considered French or allowed the privileges granted to French vessels unless the officers and three-fourths of the crew are French subjects. The bounty law fixed the payment on iron and steel vessels at 48 shillings per ton of gross measurement; on wooden vessels exceeding 200 tons, 16 shillings, under 200 tons, eight shillings, and on composite vessels, 32 shillings per ton. In addition to the tonnage bounty on ships, an allowance is paid of four shillings and ten-pence per cwt. for driving engines, steam pumps, donkey engines, and ventilators moved by machinery. Those prescribed sailing bounties are paid at French custom-houses on the entry inwards of French ships from foreign ports. French shipowners were not charged formerly port dues on deck erections that were not added to gross tonnage. It was to the interest of shipowners to make the net tonnage, on which harbor and other dues were charged, as low as possible; but in 1873 all permanent constructions on the upper deck that were closed, or could be closed by hatches, doors, or shutters, or that were constructed for the accommodation of crews or the storage of goods, were measured in for tonnage. French shipowners, however, strongly objected to the increasing of the tonnage on which a tax was collected. Under the law of 1893, when the bounty system was renewed, there was a desire to make the gross tonnage appear larger, in order to reap the full benefit of the bounties. An agitation has arisen at the leading French ports against the deductions on British ships from gross tonnage, and it is requested that the net tonnage as per register should no longer be acted upon, and that vessels under foreign flags should be taxed on deck erections. We have no bounty allowance on ships flying the British ensign or built in the United Kingdom, and therefore no advantage can be gained by needlessly augmenting gross tonnage or net register. The principle, however, is indefensible on international grounds, for, not only is the bounty paid on ships trading direct to and from France, but it is claimable on international routes in any part of the world. Thus, for example, a fleet of steamers may ply on the Indian, Chinese, or Japan coasts for years, and their owners are entitled to the bounty for the entire service abroad when the vessels return to France. In fact, the claim is so thoroughly and publicly established that it has become insurable. The navigation bounty is expressly described under Art. 9 as a compensation "for the charges imposed on the merchant navy for recuting for and service in the military navy." The measure serves the purpose of a naval league, or pensioned reserve. The bounty is confined to French ships in the foreign trade, without reference to coasting, if they are are in foreign waters. Steamers may be retained in foreign coasting trades till their boilers or machinery require renewal, and, on coming back to France for repairs to hull and engine, the bounty is due up to the day of arrival in a French port. This mode of compensating shipowners for ti e employment of their vessels is bound to help in the earning of dividends, and is a safe source of income. Half the bounty is paid on foreign-built ships owned in France, and no insuperable difficulty exists in finding bogus French owners. The French strive to combine peace and war under the maritime laws, and the bounty system is a specimen of their achievement in endeavoring to secure crews for warships from a mercantile marine source of manufacture.

THE KEEPER OF MIDDLE ISLAND LIFE-SAVING STATION.

Capt. Eugene P. Motley, the recently appointed keeper of the Middle Island life-saving station, was born in Clyde, Ohio, April 6, 1857. At a later date the family moved to Norwalk, Ohio, and in July, 1867, to Alpena, Mich., where the subject of our sketch has made his home ever since.

It appears that there are youngsters who are at least, partly amphibious, and of such an order seems to have been young Motley, for he gravitated between the school-house and the waters of Thunder Bay, until at the age of 14 years, when he started in to make his living afloat. After various acquatic and nautical experiences he was selected in 1881 as No. 1 surfman in the crew of the Thunder Bay Island life-saving station, serving there until 1886, with the exception

CAPT. EUGENE P. MOTLEY.

of one season, that of 1885,. when he served as surfman at the Sturgeon Point station.

During the winter of 1886 Mr. Motley started to learn the printer's trade in the office of the Alpena Argus and he was employed there until 1892, after which he again joined the Thunder Bay Island life-saving station as surfman No. 1, and served there until 1896, when he joined the Middle Island station. On the transfer of Capt. W. A. McLellan to the Duluth station, vice Capt. Donald McKenzie, deceased, E. P. Motley was promoted from surfman No. 1 to keeper of the Middle Island station, the selection taking effect Sept. 17, 1898. Capt. Charles E. Motley, keeper of the Cleveland life-saving station, which is considered one of the most important on the lakes, is a senior brother of Capt. Eugene P. Motley, now so worthily, after a long period of service, filling the position of keeper at a hard-working and exposed station in Lake Huron.

ASSISTANT INSPECTORS OF HULL MATERIAL.

The United States Civil Service Commission announces that as the result of the examination scheduled to be held on February 7-8, 1899, for the position of Assistant Inspector of Hull Material, certification will be made to fill a position of the kind mentioned, at the Homestead Steel Works, Pennsylvania, as well as at the works of Allen Wood Company, Conshohocken, Pennsylvania.

INSPECTOR OF HULLS.

STEAMBOAT-INSPECTION SERVICE,
TREASURY DEPARTMENT, April 11-12, 1899.

The United States Civil Service Commission announces that in view of the fact that no applications were filled for the examination scheduled to be held on January 10-11, 1899, for the position of Inspector of Hulls, Steamboat Inspection Service (Treasury Department), at Memphis, Tennessee, at a salary of $1,200 per annum, another examination is scheduled for April 11-12, 1899.

The examination will consist of the subjects mentioned below, which will be weighted as follows:

Subjects:	Weights:
1. Letter writing,.....	10
2. Arithmetic, (consisting of problems in common and decimal fractions, mensuration and square root),.....	10
3. Hull construction,.....	30
4. Pilot rules, and inland navigation,.....	20
5. Life-boats and life-rafts,.....	10
6. Experience, ...	20
Total.....	100

Two days will be allowed for this examination.

Applicants for this examination must have had at least five (5) years actual practical experience as master or first-class pilot of steam vessels of over one hundred (100) gross tons. A portion of this fiive (5) years must have been within the seven (7) years next preceding the date of application. The five (5) years experience must have been under United States license of the highest grade granted upon the waters on which the applicant has been so employed. The experience as masters must have been on vessels required by law to carry licensed masters. The fact that he is so licensed must be of record in the Treasury Department.

Applicants must be free from the defect of color blindness.

This examination is open to all citizens of the United States who comply with the requirements, without regard to race or to political or religious affiliations. All such citizens are invited to apply; but attention is invited to the fact that in making certifications to fill this position preference will be given to those eligibles who are legal residents of the above named Steamboat Inspection Service District. Subject to this preference applicants will be examined, graded, and certified with entire impartiality and entirely without regard to any consideration save the ability as shown by the grade they attain in the examination.

Persons desiring to enter this examination should at once write to the United State Civil Service Commission, Washington, D. C., for application blanks (Form 1087,) which should be properly executed and promptly forwarded to the commission at Washington, D. C.

LAKE SUPERIOR LEVELS.

The water level of Lake Superior during the past year was materially above the average for the past 12 years. Lake Michigan and Lake Huron in the same period have been about one foot below the average of the past 28 years, while Lake Erie has not varied from the general average of the past 24 years.

The cause of the different stages it is thought is that the changes in the lake levels are produced by variations of the annual rainfall on the area of the watershed drained by the lakes.

It seems definitely settled that the extensive harbor and channel improvements of the past few years have nothing to do with the rise and fall of the lake level. It is expected, however, that when the Chicago drainage canal is opened, it will appreciably lower the levels of Lakes Michigan and Huron.

IN mail subsidies alone, France paid out, in 1897, no less a sum than $4,962,643; in bounties on the construction of vessels she paid $792,525, and in navigation bounties—that is, for distance sailed by sail or steam freighters—she paid $1,847,923. In other ways she paid out sums sufficient to bring the total to no less a sum than $8,000,000 for one year, in aids to her ships and her seamen.

AMERICAN shipbuilders only ask for a chance to show that they can build ships in this country as cheaply as they are built abroad. Such a chance they expect to get if the shipping bill introduced in Congress by Senator Hanna and Representative Payne is passed. That bill merely proposes to do for American shipowners what foreign governments now do for foreign shipowners.

MARINE RECORD

ESTABLISHED 1878.

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CLEVELAND, O., FEBRUARY 2, 1899.

MERCHANT MARINE NEEDED

Senator Hanna has now before the Senate a bill, duplicated by Representative Payne in the House, that proposes to fortify the United States, for peace and for war, with a merchant shipping adequate to the nation's needs, and as a consequence in part at the nation's expense. It is shown that European nations alone pay out to their merchant shipping over twenty millions of dollars annually in subsides to swift and powerful steamships, and in bounties on the construction and navigation of merchant ships. American capital is not asking for this, but, unless this country does as much for its shipping upon the sea as other nations do for theirs, capital will not venture into merchant ships. It is for the nation to decide whether the strength and support assured in a great merchant shipping and merchant seamen are worth the expenditure that is considered necessary. That we are constantly exposed upon the sea and the seaboards is manifest by this time, to all the world, as our condition and peril have been emphasized in our war with Spain.

Capt. A. T. Mahan, whose writings on Sea Power have given such eminence, and entitle his opinions to such careful consideration, in his great work, says:

"The question is eminently one in which the influence of the government should make itself felt, to build up for the nation a navy which, if not capable of reaching distant countries, should at least be able to keep clear the chief approaches to our own. The eyes of the country have for a quarter of a century turned from the sea; the result of such a policy and of its opposite will be shown in the instance of France and of England. Without asserting a narrow parallelism between the case of the United States and either of these, it may safely be said that it is essential to the welfare of the whole country that the conditions of trade and commerce should remain, as far as possible, unaffected by an external war. In order to do this the enemy must be kept not only out of our ports, but far away from our coasts.

"Can this navy be had without restoring the merchant shipping? It is doubtful. History has proved that such a purely military sea power can be built up by a despot, as was done by Louis XIV; but though so fair seeming, experience showed that this navy was like a growth, which, having no root, soon withers away. But in a representative government any military expenditure must have a strongly represented interest behind it, convinced of its necessity. Such an interest in sea power does not exist, cannot exist here without action by the government."

Senator Hanna and Representative Payne's shipping revival measure proposes that the government shall take the action which Mahan deems so needed, in order that we may fortify and replenish our navy with trained men and auxiliary ships, whenever needed. There is need, on industrial and commercial grounds—but of minor importance to national defense—for an American merchant marine. We spend, annually, two or three hundred millions of dollars in freights to foreign ships. That money, or its equivalent in our products, goes out of the country, and it serves to provide employment for aliens while our own people are deprived of the benefits of the employment and the money at home.

From every point of view, for national defense, for national warfare, for the employment of our own citizens, the use of our own abundent materials—for military and for economic reasons—the need is pressing of such government action as shall induce American citizens to invest in and navigate merchant ships in the foreign trade.

THE RIVER AND HARBOR BILL.

A distinguishing feature of the river and harbor bill just reported to the House is the absence of the usual appropriations for the smaller localities throughout the country. Liberal appropriations are made for important improvements and for the maintenance of channels in streams on which there is a large commerce, but a number of localities which in previous river and harbor bills have received consideration, on account of the importunities of representatives in whose districts the "improvements" were to be made, have been entirely passed over in framing the present bill.

Chairman Burton is reported as holding that much of the antagonism to river and harbor legislation has arisen from the useless expenditure of money upon creeks, bayous and frog ponds throughout the country, while the public generally has approved, or at least bas failed to criticise, appropriations made for making accessible our larger harbors and opening up to the interior main waterways and their tributaries.

It does not follow that some of the excluded items will not be inserted when the bill is under consideration in committee of the whole, and it will be unprecedented if the Senate does not add a few before sending the bill back to the House. It may be thought necessary to do so in order to prevent the larger and more worthy appropriations in the bill being foolishly cut down.

Some years ago an appropriation for the improvement of a creek in an interior state appeared in successive bills, in spite of a report upon it from the engineer corps that the money had not been spent because the "navigable stream" could not be discovered. But the vote of the member from that district could not be had for the pending bill unless that appropriation was in it, and it was inserted, and history sayeth nothing further.

Chairman Burton did right in working to keep the bill, as far as possible, free from indefensible features. As reported, the measure is one that can be defended against adverse criticism. It carries a large sum, but the work provided for is necessary to commerce, and the appropriations for main waterways and important harbors ought not to be cut down to the end that insignificant creeks and channels without commerce may have money spent upon them in order to make some members "solid" with constituents who will temporarily benefit by the outlay.

IT is stated in the annual report of the Secretary of the Treasury that it has not escaped the notice even of the less acute among our observing citizens that while we have laws to protect and encourage industries in which, from natural conditions, we must equal or excel our competitors, the building and navigation of vessels for the international exchange of products have received but scant and desultory notice from the law-making power of late years. Yet during these years the conditions under which shipbuilding and over-sea navigation are conducted by maritime nations have so changed that the statutes on our books have almost lost vitality. A positive policy which shall create anew an American seagoing merchant fleet is not intrinsically more difficult to establish than has been the recent rehabilitation of the American Navy, or than, a third of a century ago, was the establishment of transcontinental railroad communication. It will undoubtedly require at the beginning, and for some time to come, the appropriation of appreciable sums of money, though very much less than our annual expenditures in times of peace for naval construction and maintenance; but from the nature of the situation, these expenditures, if adequate at the outset, can be decreased, and, as is usual with properly adjusted expenditures for the improvement of means of transit and communication, will bring in an early and steady return on the investment.

JUST so long as the great foreign maritime powers expend twenty millions of dollars every year in building up and sustaining their merchant marine upon the sea, and this nation does nothing for American ships whereby they can compete with the aided foreign ships, just so long we shall remain weak upon the sea—just so long we shall be at the mercy of our foreign rivals. So long as subsides are paid by other governments, and without abatement—indeed, they are increasing year by year—so long we must do likewise, or we shall possess neither seagoing ships nor seamen. And, if only for naval recruiting purposes, we need both merchant ships and consequently, merchant seamen.

WHO dosen't know that foreign ships are operated much cheaper than American ships are? Who dosen't know that foreign ships have every privilege in an American port, in the carrying of American imports and exports that American ships enjoy? Why, then, this being true, would the owner of a foreign ship wish to place her under the American flag?

LAKE FREIGHTS.

Corn rates are up to 3 cents at Chicago. There is no change in the Ohio coal freight situation. Some talking in regard to season contracts on coal is being indulged in but it cannot be learned that any chartering has been done aside from single trips for early cargoes. The docks at upper lake ports will be pretty well cleaned up by the opening of navigation and very little coal will be carried over, as a result of the excessively cold weather all over the west and northwest during the past ten days, as well as the fact that the winter supply is somewhat low. Milwaukee reports that there will be very little coal on hand at that port by the opening of navigation.

Ore rates are firm at 60 cents from Lake Superior ports and 50 cents from Escanaba. Shippers from Marquette have tied up several tows during the past week, the contracts running into November, and shippers from Escanaba and the head of Lake Superior are doing some business at the rates named, although vessel owners do not appear to be as anxious to charter as they were early last month. A number of vesselmen are on the fence and some of them will probably hold off until something more is done in coal.

SUEZ CANAL RETURNS.

The annual statement or the traffic and returns of the Suez canal, just issued, contains some interesting data, and shows that the year passed is the best with respect to tonnage and traffic receipts that the working of the canal has ever presented.

The total number of steamers passing through the canal during the year 1898 was 3,464, representing 9,186,912 tons net. The traffic receipts upon the same reached 84,094,507 francs. The year nearest approaching in results to 1898 was 1891, when 4,206 steamers representing 8,699,020 tons net, used the canal. The dues reached 83,421,504 francs. The increase in tonnage in 1898 over the previous year was 1,287,931 tons, while the revenue was 11,196,872 francs in excess of 1897. In the monthly statements the traffic by nationalities is given. Of the total tonnage passing through the canal, and of the dues received on account thereof, Britain provides 6,171,961 tons and 56,419,153 francs—no less a proportion than 67 per cent. Germany ranks second with 9.76 per cent., her tonnage being 896,998 tons; while France comes third with 723,026 tons, being 7.87 per cent. of the total traffic.

THE DOMINION ATLANTIC LINE.

It is reported that the promoters of the new line of steamships between Milford Haven and Paspebiac, Canada, had acquired two additional vessels for the service, and that further extensions were contemplated. A fresh stage has been reached by the circulation in London, privately, of the prospectus of the Canadian Steamship Company, Ltd. Share capital to the total amount of £150,000 is divided into 100,000 six per cent. cumulative preference shares of £1 each, and 50,000 ordinary shares of £1 each. There are also £200,000 five per cent. first mortgage debenture bonds of £50 each, on which £10 is called for. The present issue consists of the £200,000 mortgage debentures, and of 75,000 six per cent. cumulative preference shares of £1 each. The whole of the ordinary shares credited as paid up have been taken in part payment under agreement by the Atlantic and Lake Superior Railway Company, and 25,000 preference shares have also been taken up, 22,500 of them being taken by shareholders in the Atlantic and Lake Superior Railway Company.

Among the directors are Sir Robert Garnet Head, chairman (chairman of the Atlantic and Lake Superior Railway Company), Mr. G. N. Armstrong (managing director of the

Atlantic and Lake Superior Railway Company), Mr. C. E. Newbon (chairman Milford Docks Company) and Mr. Fraser. The three passenger steamers of 17 knots an hour will be put on the service next March.

VOYAGE OF THE GRIFFIN.

The narrative of the voyage of Sieur de La Salle and his crew of wild adventurers, as told in the journal of Father Hennipin, reads more like that of Jason and fellow Argonauts than of a plain matter of fact record. La Salle was a young man, in his 23d year, when, stimulated by the story of the unfortunate Joliet, he resolved to make a thorough search for a passage to China by way of the lately discovered Mississippi. To this end he gathered a crew of daring courieur de bois, numbering 36, with himself as captain, and a brave Italian, Henry de Lonty, as lieutenant. To these were added Father Hennipin and two Ricollet friars, as missionaries, making in all 40 people, a number of whom were ship carpenters, with a gruff old Bisque sea dog as pilot.

With four well stored bateaux, the company left Montreal in the early part of September, 1678, and, coming up the Niagara river, landed at what is now called Queenstown. There was a portage on either side of the river at this point, the one at Lewiston ending above the falls at Schlosser; the west side one, at what was later known as Chippewa Creek, where a large portion of that tribe had a village.

Leaving their bateaux at the foot of the west portage, La Salle formed a depot at the above place, four miles above the cataract—"because," as Hennipin states, "there were many goodly trees there." Here it was decided to build a sailing vessel, La Salle being fully assured he could take her over the portage at Sault Ste. Marie into Superior, and so through to the Mississippi, and thence to China.

With the assistance of the friendly Chippewas, the work of building was commenced and carried on vigorously all that winter. In July, 1679, she was launched, called the Griffin, and, loaded with fresh supplies from Montreal, she spread her canvas on the waters of Erie, on the initial voyage. The Griffin was not a very pretentious ship, being but a two-masted fore and aft schooner of 40 tons burden. She was double-decked, armed with five small cannon, three of which were brass. Her poop deck was very high and surmounted with an eagle, while on the bows perched a griffin. In Hennipin's journal a rude drawing of the vessel is given.

She was loaded with goods, to trade with the Indians, and her destination was St. Ignace, where La Salle was to be joined by a fresh addition of courieur de bois. Lake Erie was crossed—or rather coasted—without any incident of note, althought the Bisque pilot protested vigorously against "the nasty fresh water lake, with its chopping seas and yeasty foam."

The voyage was a slow one, as it was Aug. 11 before the Griffin entered the Straits of Detroit and cast her anchor somewhere near the embrasure of the Rouge, where was a large Indian village. Here they remained several days, and Hennepin relates that he and his two friars landed and found "a hideous stone image, which they forthwith did brake to pieces with an axe, to the astonishment of the Indians." As a result of this good work, he adds "that the next day they did kill a bear and two large bucks."

All the adjacent lands are described as being prolific in fruits and abounding with walnut, butternut and hickory nut trees, "with much of which," the priest states, "they loaded the Griffin." On the 18th of August they set sail and entered the little lake, where with much religious ceremony they bestowed the name of Sainte Claire on it and the river, which are still so termed. They entered Saginaw bay on the 24th, and the next day encountered a terrific storm, by which the Griffin was nearly wrecked, but, as Hennipin states, "thanks to St. Anthony of Padua, they were saved, and to whom all returned thanks, save the old pilot, who roundly cursed La Salle for bringing him to be drowned in the nasty fresh water."

Without further mishap they passed the Mackinaw straits, and cast anchor at St. Ignace, where a vast multitude of Indians awaited them. The trade was so brisk that in a short time the cargo of the Griffin was exchanged for valuable furs, and more goods were demanded. Back to the Niagara she had to go, and the fate of the Griffin or crew has never been known. It was presumed that she was captured by the hostile Ottawas and burned after the massacre of her crew. La Salle charged treachery on the part of the pilot, which was evidently unfounded, as all inquiries as to the fate of him or his unfortunate comrades proved futile.

The date of this, the first vessel lost on the lakes, is placed somewhere about the 10th of September, 1679.

So ends the tragic story of the cruise of the Griffin—the first sailing vessel to spread her canvas to the winds of these inland lakes, 219 years ago. Two years later Cadillac planted the French lilies in Detroit.

NEW CANADIAN STEAMER.

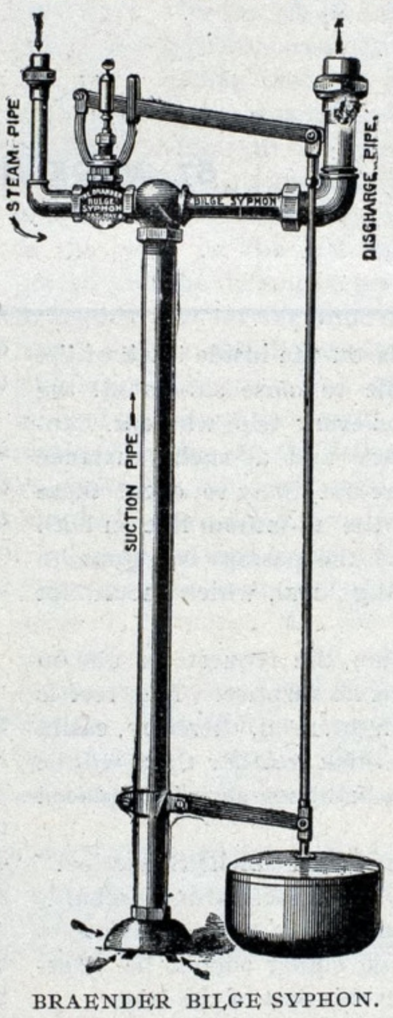
The annual meeting of the G. N. Transit Co. was held in the company's offices at Collingwood, Ont., last week, when it was decided to replace the burned steamers Pacific and Northern Belle, the former with a new steamer to be built this winter, and the latter by a first-class boat which the company will either charter or buy. The new boat will be built at Collingwood. Her dimensions will be 190 feet in length, 32 feet beam and 10 feet 6 inches depth of hold. These dimensions are 10 feet longer and 18 inches greater beam than the Pacific. She will cost about $65,000. It is expected that she will be ready to take her place on the "Soo" route some time in June. Officers were elected as follows: J. J. Long, president; C. Cameron, vice-president and manager, and Thos. Long, secretary and treasurer.

THE BRAENDER BILGE SYPHON.

(Illustrated.)

All seafaring, lake, and coast steamboat men appreciate the benefits afforded by always having dry limbers.

An admirable device for effecting this desirable condition, and one which is commended to the attention of our readers, is the Braender automatic bilge syphon, manufactured by Philip Braender, 47 West 125th street, New York City. When once this pump is set in place, it needs no further attention, as it works automatically and starts pumping upon the least accumulation of water in the hold.



BRAENDER BILGE SYPHON.

It is simple in construction and operation, and its entire freedom from possible disarrangement, together with its pronounced success in removing large quantities of water at a nominal cost of operation, has won it the approval of leading engineers, shipowners and seamen everywhere.

The United States Government endorse the Braender bilge syphon, and it is used and recommended by the Star Line, New York Line, and other large companies.

In one instance it was found that a boat after being equipped with this device, could be loaded with several tons more freight than formerly.

Mr. Braender will be glad to furnish catalogues upon application, and any further information readers may desire.

ALIMENTARY VALUE OF FISH.

The alimentary value of fish is indisputable; it is wholesome and nutritious, and in its wide range of quality and flavor affords gratification to the coarsest as well as the most refined palate. Moreover, in primary cost, it is the cheapest of flesh foods, and should, therefore, be the universal aliment, everywhere a staple dish upon the family board. To most, however, it is substantially a luxury, in many localities it is not obtainable fresh, and so falls into public disfavor; but even where presented in acceptable condition, the accommodation is usually effected with difficulty and expense, involving a corresponding limitation of sale. Thus it is that the consumer is dissatisfied, the dealer is not content, and the producer, the poor fisherman, rightly bewails his lot, for he profits least. It can be truthfully said that there is no branch of civilized effort wherein the producer receives so small a proportion of the ultimate or consumer's price, as does the toiler of the sea for the unchanged product of his labor.—From "Our Fish Supply and Its Deficiencies," A. H. Gouraud, in "North American Review" for February.

CHICAGO DESIRES RECOGNITION.

The following preamble and resolutions were adopted by the Board of Trade of the City of Chicago, at its annual meeting, held January 26, 1899:

Whereas, the total entrances and clearances at the Port of Chicago during the year 1898 were in excess of the entrances and clearances in foreign trade at the ports of Boston, Philadelphia, Baltimore and New Orleans combined; and,

Whereas, the tonnage of vessels entered at Chicago during the year 1898 was greater than the combined tonnage in foreign trade for the fiscal year 1897 at Boston, Philadelphia, Baltimore, New Orleans and San Francisco; and,

Whereas, the government assumed control of the Chicago river in 1890 and has exercised jurisdiction over it ever since; and,

Whereas, the government has neglected the Chicago river for many years, while it has appropriated millions of dollars for the improvement of rivers and harbors in other parts of the United States:

Resolved, that the Board of Trade of the City of Chicago hereby respectfully and earnestly urges Congress to make an adequate appropriation for the improvement of the Chicago river, in order that the same may be made navigable for the largest modern lake vessels when fully loaded, and may have a depth of not less than 21 feet;

Resolved, that the needs of internal commerce and foreign trade imperatively demand prompt legislation on the part of the government to this end;

Resolved, that a copy of this preamble and these resolutions be forwarded to our Senators and Representatives in Congress and to the members of the Committee on Rivers and Harbors.

ZINA R. CARTER, President.
GEORGE F. STONE, Secretary.

KENNEY FLUSHOMETERS ON THE U. S. TRANSPORT GRANT.

The U. S. Transport Grant that sailed January 19 with troops for Manila, is equipped with 63 Kenney Flushometers, which were installed by The Kenny Co., sole manufacturers, 72 Trinity Place, New York.

The individual overhead tank for flushing has long been undesirable for use aboard ship, the rolling of the vessel causing the water to spill and the supply of flush to be irregular and unreliable,

With the Kenney Flushometer system there is one large supply tank. From this the water is pumped at an even pressure through supply pipes to the flushometer attached to each closet. Here the supply is regulated to the demand and the flushing is accomplished without wet floors, without noise, and in the most economical, thorough and satisfactory manner, let the vessel roll and pitch as she may.

The Kenney Co. have placed their flushometer aboard a number of government vessels, it having received the endorse ment of the Army and Navy Departments.

ANNUAL MEETING OF INLAND LLOYDS.

Members of the Inland Lloyds, at the annual meeting held in Chicago, elected the following officers: President, J. J. Clark, of Detroit; secretary and treasurer, A. H. McDonald, of Detroit; chief inspector, A. B. Drake, of Buffalo; executive committee, David Vance, of Milwaukee, H. S. Sill and W. J. Sandrock, of Buffalo.

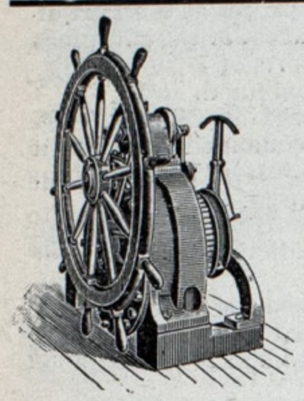
Vessel surveys for 1899 were reported in active preparation, and the register will probably be issued within the next sixty days. The new register will show greatly increased valuation on wooden vessels.

An informal meeting of the subscribers to last season's joint grain certificate was held when resolutions were adopted to continue the plan this season, with a few changes indicated by experience. Owing to heavy losses during the last two years the rates on grain cargoes will be advanced. J. S. Gadsden, of Chicago, is the originator of the joint grain certificate, which last season was composed of twelve companies, each assuming a certain portion of the lines written.

Among the companies represented at the Inland Lloyds meeting were: Mannheim, Greenwich, Aetna, Detroit, Commercial Union, Boston, Union Marine, Chicago, Dubuque Fire and Marine, United States Lloyds, General Marine, Marine Sea, and London Assurance.

DISCUSSING in the North American Review, for February, the problem of the restoration of "Our merchant marine," the Hon. Sereno E. Payne, chairman of the committee on the merchant marine and fisheries in the House of Representatives, avers that we have reached the period of a new development in American industries. The beginning of next century will see this nation making giant strides toward capturing the markets of the world. Means of transportation, however, must be provided, but solely under the American flag. With this done there can be no limit to our commercial achievement.

Queen City Patent Hydraulic Steerer.



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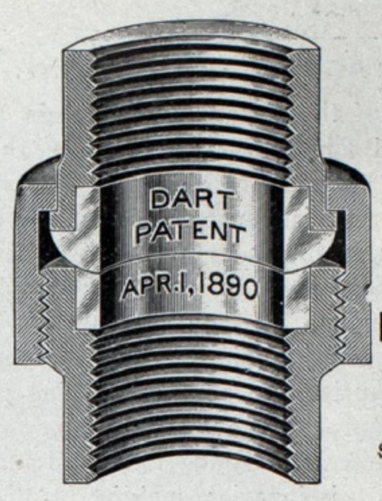

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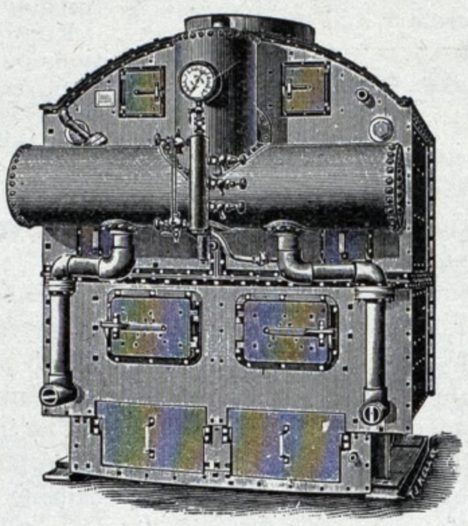

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CORRESPONDENCE.

☞We do not hold ourselves responsible in any way for the views or opinions expressed by our correspondents. It is our desire that all sides of any question affecting the interests or welfare of the lake marine should be fairly represented in THE MARINE RECORD.

RESPECTING AIDS TO NAVIGATION.

(Communicated).

The recent suggestions of "Subscriber" of the MARINE RECORD, concerning practical aids to navigation, are open to corrections, because some of the aids and alterations advocated are either superfluous or of no use in thick weather.

The request for two gas buoys in Waugoshance Passage, Lake Michigan, instead of the present can and spar buoys, is not a surprise, in view of the fact that lake captains always like close shaves. The four lights, respectively light vessels, with as many fog signals, north, south, east and west at and in the passage, of which any three are sufficient to carry vessels safely through the passage in clear as well as in thick weather, are already an overdose of the good things to navigation, which two additional gas buoys would not materially increase, because of their being of no use in thick weather.

The request for a gas buoy on the shoal two miles south from North Manitou Island, Lake Michigan, shows that the new light on North Manitou does not answer the purpose for which it was established, namely, to guide vessels through Manitou Passage. But, if the light is of no use in clear weather and an additional gas buoy is required the fog signal connected with the light is of no use in thick weather neither.

Thus, both light and fog signals are failures, for which not a gas buoy, but a light vessel with fog signal in Manitou Passage is the proper remedy, rendering gas buoy and light with fog signal on the island superfluous.

A parallel case is the request for a gas buoy on Squaw Island Spit, and a light vessel on Lansing Shoal, Lake Michigan, the light and fog signal established on Squaw Island being a failure in guiding vessels in thick weather through the passage between spit and shoal. Lansing Shoal is a little over three miles from the spit; therefore, with a lightship and fog signal on Squaw Island Spit the passage would need no other aid, and gas buoy with light and fog signal on the island be superfluous. But the general belief is, that of the good things there cannot be too many, and, therefore, the lightship is wanted for the shoal, and a gas buoy for the spit, irrespective of the functions they are able to perform. For, the spit is on the inside track of the main route, and, therefore, liable to close shaves all the time, saving nearly two miles on every trip; whereas, Lansing Shoal is at the outside track and at such a distance from the spit that close shaves are not likely to occur there often. Besides in thick weather the 15-fathom line on both sides of the western approach to the passage is a guide to the spit and keeps clear of Lansing Shoal, which should not be lost sight of.

As gas buoys are now the fashion, the request for one on Richards Reef, Lake Michigan, is no surprise. This reef is within sight of Beaver Island light, and, therefore, easily located in clear weather; but in thick weather there will be trouble. Instead of a gas buoy a bell buoy should be placed there.

The same applies to the Boulder Reef (which "Subscriber" forgot to mention) about twelve miles west from Richards Reef. Both reefs are within easy range of Gull Island, to which Squaw Island light and fog signal should be transferred to make navigation safe in this part of the lake.

In view of the fact that Forty-mile Point light and fog signal on Lake Huron has been established at the instance of the Lake Carriers' Association, the request for a change in position is not likely to meet with approval. This aid is one of the supernumeraries of the lakes, as the lead and light vessel No. 62 on Poe's Reef with fog signal are all sufficient to find the entrance into the south channel in thick weather. Forty-mile Point light and fog signal is one of the good things that need no change nor care.

Of all the suggestions made by "Subscriber" none deserves so much consideration as the request for a lightship with fog signal at Southeast Shoal, Lake Erie. To make the main entrance into Pelee Passage from the east in thick weather the gas buoy is wholly inadequate, as on a run of 100 miles and over it is no uncommon occurrence of vessels being off their intended course; and as Southeast Shoal acts as a bar at the entrance for several miles, its extremity should be marked by a fog signal to facilitate finding the turning point at the southern entrance in thick weather.

The same applies to the northern entrance between Middle Ground and Grubb's Reef (not mentioned by "Subscriber") where the gas buoy on Middle Ground should likewise be superseded by a light vessel with fog signal. For, on a run from Colchester Reef an error of only ⅛ of a point in the course made good is sufficient in thick weather to miss the entrance and get stranded, the lead being of no use, because the bottom of the lake is nearly a level plane close up to both obstacles at the entrance.

The uselessness of gas buoys in thick weather, and of fog signals at a distance from the fairway, has been practically demonstrated in recent years at Pelee Passage; nevertheless, the opinion still prevails, that they will do in other places, of which "Subscriber" has furnished abundant proof in his communication to the RECORD.

JOHN MAURICE,
Civil Engineer and Nautical Expert.

Chicago, Feb. 1, 1899.

SOME ASTRONOMICAL NOTES FOR FEBRUARY.

(Communicated.)

Mars has been an object of special interest and study during the past month and will continue to be during the present month. He passed opposition, his nearest approach to the earth, Jan. 18, and attained his maximum brightness on the same date. The earth is now rapidly leaving him behind and hence increasing the distance that separates the two planets. Though the distance of Mars from the earth at the recent opposition was considerably greater than it is on some like occasions, by reason of his great northern declination he is favorably situated for telescopic observation. Only large telescopes can reveal in detail his surface markings and bring to view his wonderful system of canals, of which we hear so much. In the field of a small telescope, when he is most favorably situated, only the most general features can be discerned, hence he is not a general favorite with amateur observers. He is situated at present in the constellation of the Gemini, almost in line with Castor and Pollux. His retrograde (westward) motion has been quite marked during the past month and will continue during February. He will be an evening planet all summer but from this time will slowly lose his brightness, so that a few months hence only his most intimate friends will recognize him.

Venus is the most brilliant planet in the eastern morning sky. She reaches her greatest western elongation from the sun, 46° 52′, Feb. 11. Jupiter is also a conspicuous object in the east from about two a. m. till daylight causes him to become invisible. Near the close of the month he will rise a few minutes before midnight and hence nominally become an evening planet. Mercury will be too near the sun to be at all conspicuous during the month.

We shall miss Vega and Altair from our western evening sky during the latter part of the month, but we shall gladly

welcome the return of the brilliant Arcturus, found toward the northeast about 9 o'clock in the evening.

The brilliant winter constellations will continue to adorn the evening skies of February with no diminution of their beauty.

The sun is slowly returning from his winter's sojourn in the south, and is daily decreasing his Southern declination and hence increasing his meridian altitude. He comes to the meridian the greater part of the month about fourteen minutes slow, and at its close he is still nearly thirteen minutes late. Though the hours of darkness still out-number the hours of daylight, the latter are constantly gaining on the former, and at the close of the month will show the substantial gain of more than an hour. The face of the sun has been but slightly disfigured by spots during the past month.

D. SATTERTHWAITE, Toledo, Ohio.

MARITIME LAW.

CAPE FEAR TOWING AND TRANSPORTATION CO. v. PEARSALL et al.

(Circuit Court of Appeals. Fourth Circuit, Nov. 1, 1898.)

1. ADMIRALTY—REVIEW ON APPEAL—DISCRETION AS TO OPENING DEFAULT.—The opening of a default in admiralty being discretionary with the court, under admiralty rule 39, a ruling on a motion to that end is not reviewable on appeal.

2. SAME—DECREE PRO CONFESSO—ASSESSMENT OF DAMAGES.—After a decree pro confesso on a bill in admiralty as in equity, the amount of damages must be determined by the court from the evidence, and not from the allegations of the libel.

3. SALVAGE—DIVISION BETWEEN OWNERS AND CREW—REVIEW.—There is no fixed rule governing the division between owners and crew of a vessel of the amount received or awarded for salvage services, and, where the division made by the trial court can be justified by the rules of law on any reasonable view of the case, it will not be disturbed on appeal.

4. SAME—BASIS OE DISTRIBUTION AMONG CREW.—The respective wages received by the members of the crew of a salving vessel affords a proper basis for the distribution between them of the share of the salvage awarded to them.

5. SAME—DIVISION IN PARTICULAR CASE CONSIDERED.—Where salvage operations were conducted from the home port of the owners of the salving vessels, and directed by them, and the services involved no special danger to either vessels or crews, a division of the salvage giving the owners two-thirds and distributing the remaining one-third among the crew in proportion to their wages, will not be disturbed on appeal.

Appeal from the District Court of the United States for the eastern district of North Carolina.

This case comes up on appeal from the District Court of the United States for the eastern district of North Carolina, sitting in admiralty. The libel is filed on behalf of Edward Dearsall, engineer, and John S. Brogan, fireman, of the steam tug Jacob Brandow; and J. N. St. George, cook of the steam tug Blanche; and Ephraim Swain, fireman of the steam tug Alexander Jones. These three tugs were engaged in salving the steamship Ardrishaig on the 27th of January, 1897, ashore on the east side of Frying Pan Shoals. The owner of the tugs effected a settlement with the owners of the steamship, and received the sum of $13,000, in full of all demands. The libelants claim a share in this award. The libel was filed by the libelants named on the third of November, 1897. Monition was made returnable on the 10th of November thereafter. Respondent entered no appearance, and filed no answer or defense to the libel at the return of the monition. On the evening of the day the clerk of the District Court received a postal card from the proctor of the respondent, saying, "Defendant appears, and asks for thirty days to answer." He filed no stipulation, and gave no security for costs. Meanwhile the proctor for libelants, upon the return of the monition, had entered in the order book a motion for a decree pro confesso, and thereupon gave notice of the proctors of the respondent that on the 29th of November he would call up the cause, and ask for a decree therein. The court met on the 29th of November and sat for one week. On the last day of the term the proctor for the libelants asked for, and obtained from the court a final judgment pro confesso upon default of the respondent. The court decreed that the owner of the tugs was entitled to two-thirds of the salvage award, and ordered the remaining one-third to be distributed among the masters and crews of the tugs proportionately, and thereupon referred it to a commissioner to take testimony for the purpose of ascertaining the respective shares of the masters and crews. On the 7th of December the respondent, making special appearance for that purpose, filed a petition with the court, asking that the judgment pro confesso be set aside, and, if that was refused, prayed further relief in the matter. On the 15th of December the proctor for respondent filed an affidavit giving certain reasons for his failure to be present or to take exception when the order was presented to the court on the last day of the term, and thereupon prayed that the default be set aside, and that he be allowed to answer; and on the same day he filed exceptions to the libel. On the 16th of February, 1898, respondent entered a stipulation for costs, and on the 24th of February, 1898, he filed certain exceptions to the libel, and gave notice of a motion to strike out the default; and with that he prepared an answer to the libel, with an affidavit explaining again why he had not acted more promptly. His honor, the district judge, refused to set aside the default, or to grant any of the motions or prayers of the respondent. Pursuing the order of the court, the commissioner made his report on December 15, 1897; and, upon consideration thereof, the court, by decree dated February 22, 1898, awarded to the libelant, Edward Pearsall, as his share of the salvage money, $500; John F. Brogan, $200; J. Newton St. George, $200; and Ephraim Swain, $200. This award was made in proportion to their wages. The commissioner, having first fixed the ratio to which each tug was entitled in the whole award, reported the facts, upon which the court fixed the distribution of the one-third of the whole salvage award allowed to the masters and crews of the tugs as their share therein. In due course an appeal was allowed from the decree of the court, and it is here on assignments of error. These assignments of error are 14 in number. They go to the entering of the decree pro confesso; to the refusal of the court to entertain the motions to set it aside, or to listen to the exceptions; to the giving the libelants any share in the sum awarded to the owners of the tugs; to the amount decreed in favor of the libelants; and also an exception to the whole proceeding, that upon the case made by the libelants the court should have dismissed the libel.

VISIBLE SUPPLY OF GRAIN

As compiled for The Marine Record, by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels.
Buffalo	1,709,000	233.000	161,000	29,000	1,094,000
Chicago	3,809.000	8,491.000	1,451 000	417.000	730,000
Detroit	286.000	430,000	3.000	12,000	73,000
Duluth and Superior	4.973.000	2,430,000	768.000	162,000	372,000
Milwaukee	16,000	.....	4,000	2,000	93,000
Montreal	18,000	22,000	174.000	4.000	2.000
Oswego	.....	124,000	.....	.....	80,000
Toledo	471,000	739,000	55,000	3,000	.....
Toronto	131,000	.....	7,000	.....	34,000
Grand Total	28.583,000	27,139,000	7,025,000	1,441,000	3,335,000
Corresponding Date, 1897	36,602,000	40,581,000	15,112,000	3,840,000	3,028,000
Increase	310,000	1,078,000	39,000	.....	.....
Decrease	.....	.....	.....	356,000	19,000

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific Slope.

IN the last annual report of the Commissioner of Navigation, he analyzes the difference in the cost of constructing and running an American, as compared with a British ship, each of about 4,000 gross measurement, and of about 12 knots speed. On this point he summarizes his discussion of the subject in the following paragraph: "The sum of $9,600 may be taken as the difference in the annual cost of operation based on difference in first cost of construction. The difference in the annual payroll of a vessel of the kind under consideration has been shown to be $7,000, so that the total difference in the annual cost of operation of a 4,000-ton steel cargo steamer, between 11 and 12 knots, engaged in trans-Atlantic trade, with a crew of 48 men, may be put at $16,600 a year, or for 4,000 tons at $4.15 per gross ton. The mileage navigated during the year has been fixed at 45,000 nautical miles. A difference of $16,600 in the cost of navigating this distance is equivalent to a difference of $37 on each 100 miles traversed by the vessel of 4,000 gross tons, or a difference of about one cent for each 100 nautical miles for each gross ton."

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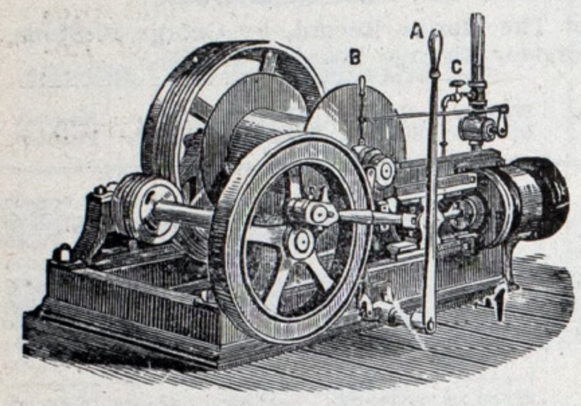

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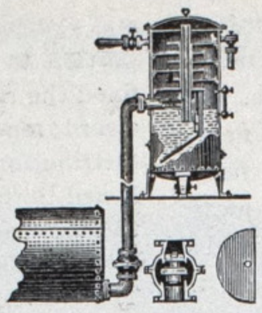

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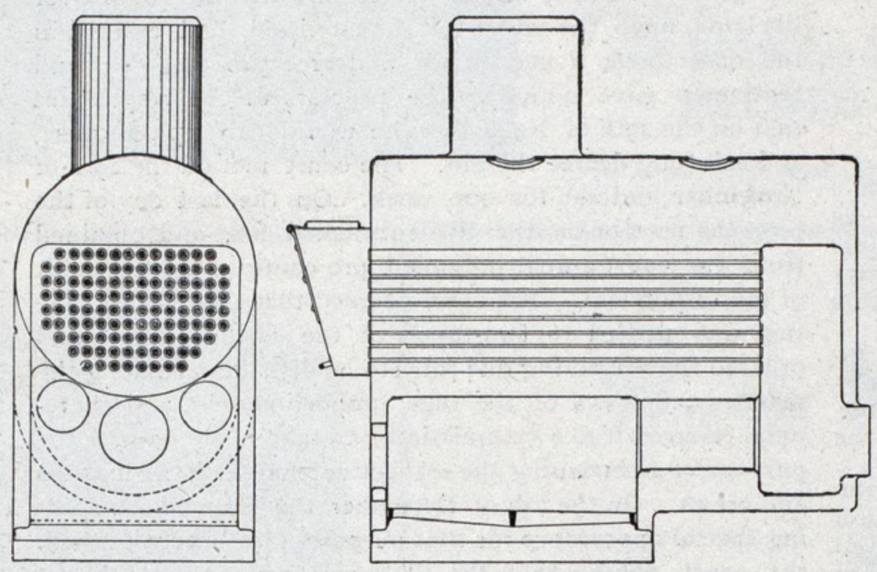

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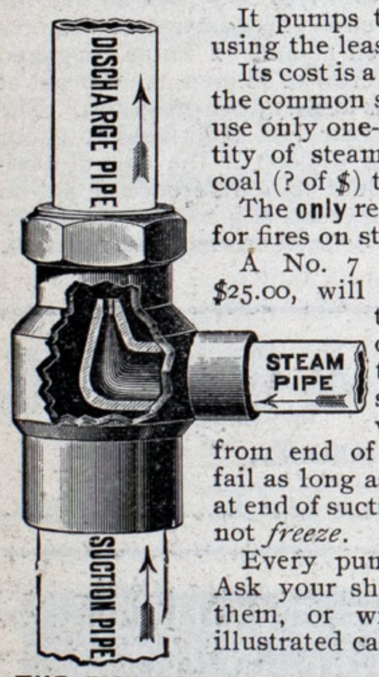

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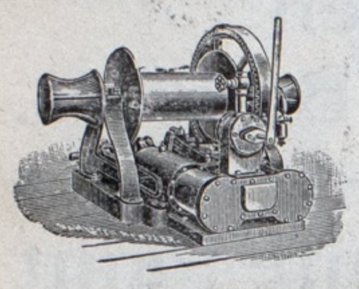

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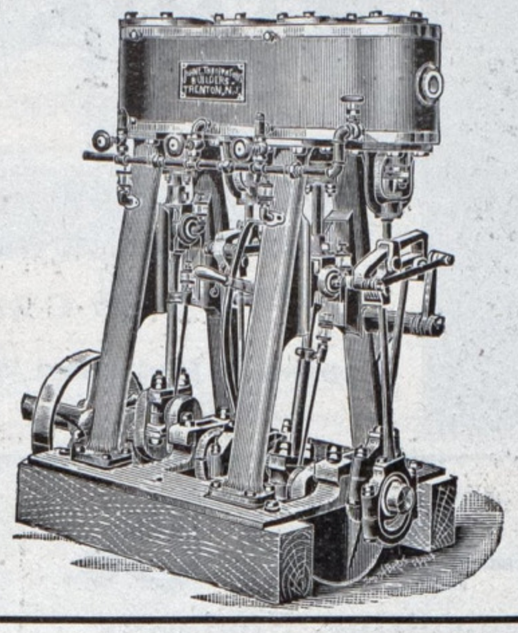

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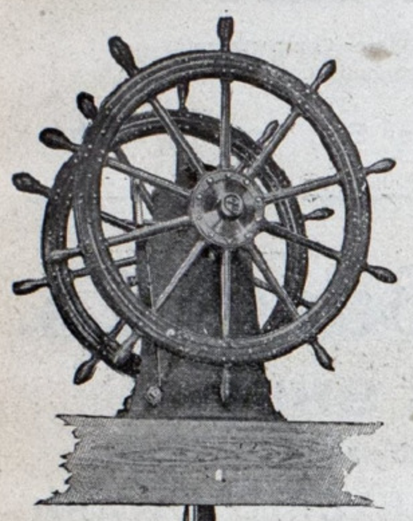

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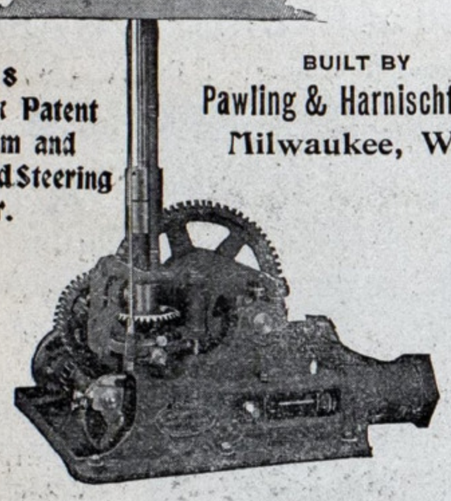

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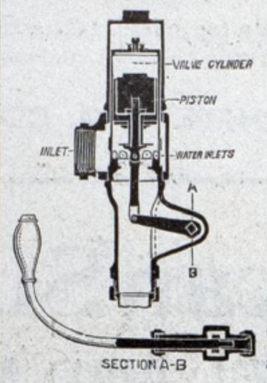

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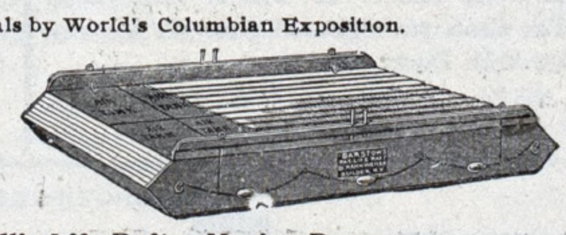

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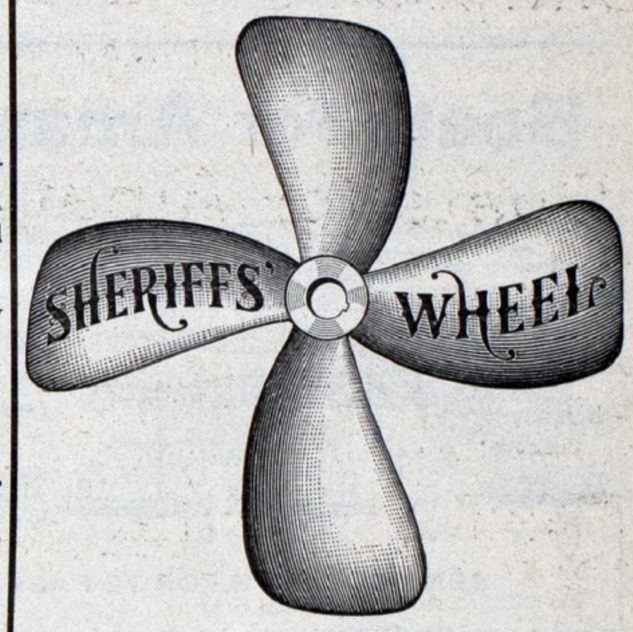

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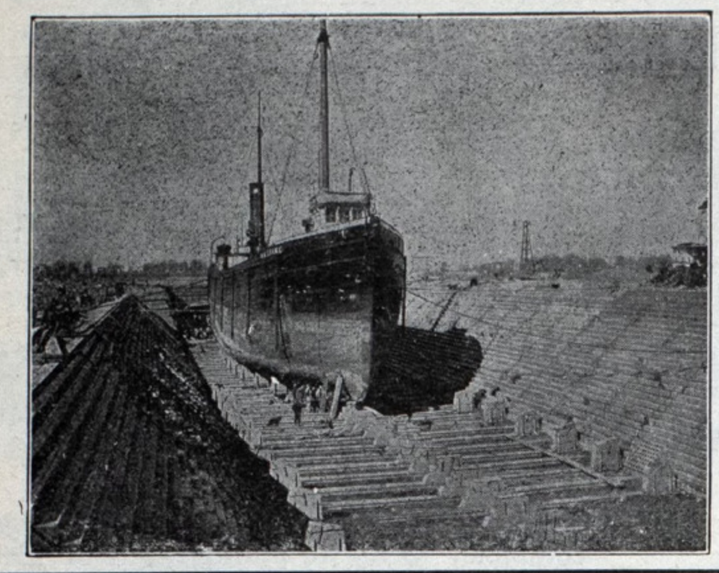

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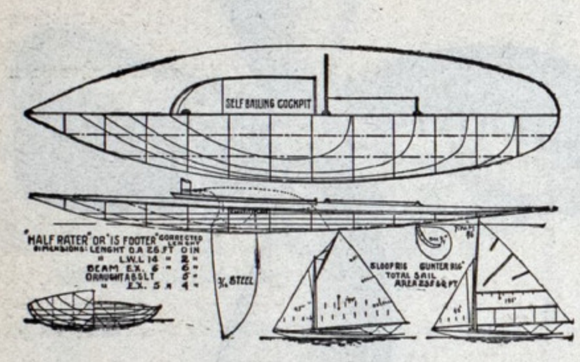

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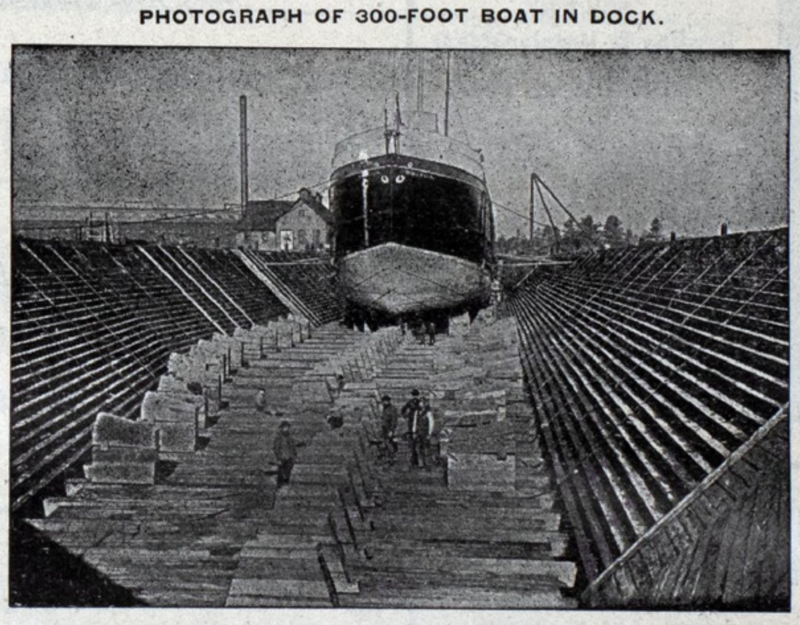

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